

## MATERIALS TOWARD A MONOGRAPH OF THE GENUS VITEX. IX

Harold N. Moldenke

### VITEX PINNATA L.

Bracts, bractlets, and prophylla rarely 3-foliolate, at the base of the lowermost panicles; flowers slightly odorous or odorless; calyx campanulate, pale- or yellowish-green when fresh or sometimes chestnut and tinged with green and purple, about 4 mm. long and 7 mm. wide, densely short-pubescent on the outside and on the teeth within, the teeth deltoid, about 2 mm. long; corolla hypocrateriform, 2-lipped, in general aspect varying from purple, purplish, or violet to bluish-white, white, or light-yellow, the tube about 10 mm. long, the lower portion glabrous on both surfaces, the upper portion pubescent and glandular on the outside, the throat glabrous except near the somewhat villous base of the middle lobe of the lower lip and near the insertion of the stamens, the upper lip varying from white to blue, violet, or purple, the lower lip pale-mauve, with its two lateral lobes often white or whitish, the larger lip about 1 cm. long and 5 mm. wide, the lobes pubescent on the outside except near the margins of the lip, glabrous within, the smaller ones about 5 mm. long and 3.5 mm. wide; stamens exserted, 11--13 mm. long, inserted at about the middle of the corolla-tube, the insertion densely villous; filaments white; anthers dull-grayish-brown or nearly black before opening; style white, 1.5--1.8 cm. long, usually equaling the stamens; stigma bifid; ovary greenish except for the purple apex, glabrous; fruiting-calyx not enlarged; fruit drupaceous, green and shiny when young, globose or flattened-globose, 7--13 mm. long and wide, glabrous.

The species is widely distributed in tropical Asia from East Bengal through India, Ceylon, and Burma to Indo-china, Malaya, the Philippines, Indonesia, and the Sunda Islands. It has been introduced in British Guiana and Madagascar, and is cultivated in tropical Asia, Hawaii, Réunion, Madagascar, and Belgium.

The specific epithet here adopted for this species seems definitely to be the correct one, in spite of its being very inappropriate, since the leaves are palmately and not pinnately compound. In the Linnean Herbarium at London sheet number 10, under the genus Vitex, is inscribed "pinnata" in Linnaeus' own handwriting and bears also the notation in Linnaeus' handwriting: "Fl. Zeyl. 415" and "India D." Later J. E. Smith struck out the word "pinnata" in pencil and wrote: "minime; nil nisi V. trifoliata J. E. Sm. vera V. pinnata in H. B." Jackson has supplied in his notes on the Linnean Herbarium the name "Dalman" for Linnaeus' "D." as the name of the collector and "Herb. Banks" for Smith's "H. B." as the name of the herbarium in which the truetype of V. pinnata is deposited. The Dalman specimen in Linnaeus' herbarium actually is V. trifolia L. and matches well sheets number 6 and 7 which are so labeled in Linnaeus' hand.

Smith's "trifoliata" is doubtless an error for "trifolia". The Banksian Herbarium, contained in volume 1 of Paul Hermann's herbarium at the British Museum, on page 16, contains the type specimen of Hermann's Anonyma and Linnaeus' Pistacio-vitex, on which names Linnaeus based his Vitex pinnata. The Hermann specimen is actually inscribed "415", the number of Linnaeus' Pistacio-vitex in his Flora Zeylanica, and is plainly conspecific with what has in the past been identified as Vitex pubescens Vahl. One leaf of this specimen has its five leaflets mounted in pinnate fashion, which may account for Linnaeus' inappropriate specific epithet. The specimen is not glabrous as Linnaeus says in his description, and it is definitely not Aglaia odorata Lour. as stated by Jackson in Index Kewensis 2: 1214 (1895) and as implied by Schauer in A. DC., Prodr. 11: 696 (1847). There is no doubt in my mind that this Hermann specimen is the type of the species now under consideration and that the species' correct name, under the present rules of nomenclature, is Vitex pinnata.

The original description of Vitex pinnata by Linnaeus in Sp. Pl., ed. 1, page 638 (1753) is as follows:

"pinnata. L, VITEX foliis pinnatis, paniculis trichotomis.  
Pistacio-vitex, Fl. zeyl. 415\*.  
Habitat in Zeylona. h "

In his Flora Zeylanica, page 195 (1747), his description is as follows:

"415. PISTACIO-VITEX.

Anonyma. Herm. herb. 1. p. 16.

Descr. Arbor. Folia opposita, pinnata (Pistaciae),  
saepe ex quinque foliolis ovalibus, glabris, plicatis,  
integerrimis, obtusis, solidis. Panicula terminans  
ramos brachiato-dichotoma. Calyx monophyllus,  
campanulatus, obsolete quadridentatus, persistens.  
Corolla monopetala, ringens; labio superiore brevior,  
reflexo, bipartito, labio inferiore trifido, reflexo:  
media majore. Stamina sub labio superiore, corolla  
paullo longiora. Germe ovatum; stylus facie staminum;  
stigma bifidum, acutum. Drupa."

The type of V. arborea is Roxburgh s.n. from India; the type of V. pubescens var. lilacina is Kuntze 6086 from Singapore. The V. heterophylla of Roxburgh and of Williams are actually V. quinata (Lour.) F. N. Will., while that of Schauer is V. urceolata C. B. Clarke. The V. latifolia Blanco is V. parviflora A. L. Juss., V. latifolia Mill. is V. agnus-castus f. latifolia (Mill.) Rehd., and V. latifolia Wight is V. altissima L. f. The V. pubescens Heyne is V. altissima L. f., while V. pinnata Lour. ex Schau. in A. DC., Prodr. 11: 696, in syn. (1847) is Aglaia odorata Lour., in the Meliaceae.

Bakhuizen van den Brink 7423 is a mixture with something not

verbenaceous, while Elmer 21101, distributed as this species in the Dudley Herbarium, is Hemisantiria rostrata (Blume) H. J. Lam of the Burseraceae.

The species is found in forest land, on slopes in forests, in dry open soil, in compact black moist soil of wooded flats, in stony soil on densely wooded riverbanks, and on the borders of mangrove swamps, from sea level to 1300 meters altitude. In Thailand it is said to be scattered or common in deciduous forests and along the edges of evergreen jungles, and it is found on seashores on Simalur Island. Henderson says that it occurs also on Dayang Bunting. It has been misidentified in herbaria as Vitex alata Willd., V. heterophylla Roxb., V. leucoxydon L. f., V. littoralis Decne., and V. saligna Roxb. It has been collected in anthesis from January to September and in December, and in fruit in March, April, June, August, September, October, and December. It is thus probable that the plant flowers and fruits throughout the year. Its wood is very durable and is used for construction purposes of various sorts in southern India. In Burma it is used to make wooden bells. Moulton says that the "color of flowers [is] Saccardo 2". L. H. Bailey, in his unpublished list of dealers handling Verbenaceae, gives "Singapore" as offering "Vitex pubescens".

Koorders 9788b has one leaf 1-foliolate, while on Herb. Hort. Bot. Bogor. XI.J.5 in the Utrecht herbarium and on Herb. Buitenzorg 24613 and 26601 the leaves are insect-galled. The Kelly 246 collection does not state on its label that it represents cultivated material, but is from Honolulu and therefore is probably from cultivated plants. The Burger 211 and 345, cited below, are seedlings 3 and 45 cm. tall — they exhibit leaves 1- and 2-foliolate, the lowest ones serrate-dentate. Docters van Leeuwen, in the references cited above, states that a gall-mite, Eriophyes cryptotrichus Nal. forms small vesicle galls on the upper surface of the leaflets, with an erineum on the lower surface.

Among the many recorded vernacular names for this species are the following: "ablas", "alaban", "alapan", "aloban", "alobanbunga", "amuráon", "binh linhn ghê", "black lëban", "búsi", "Ceylon pinnate-leaved Vitex", "cooked rice leban", "dín", "flowery lëban", "goelimpapa", "halaban", "halban", "halëban", "haniban", "hëjas", "horn lëban", "htouk-sha", "kalapapa", "kaloëan", "kaloëban", "kã non", "ki arak", "kiketaroë", "kikëtaroe", "koemilan", "kon samaw", "kopiher", "kulimpápa", "kyet yo", "kyet-yob", "laban", "laban boenga", "laban hout", "laban kaenjit", "laban kapoer", "laban këtílëng", "laban koenjit", "laban pandoeok", "laban poetih", "laban soengoe", "laban tandoek", "labari", "labhan", "leban", "lëban", "lëban boenga", "lëban bunga", "lëban haniban", "lëban hitam", "lëban koenjit", "lëban kunyit", "lëban nasi-nasi", "lëban pantis", "lëban tandoek", "lëban tandok", "lëban toengkak", "lëbën", "ma'ne", "manëh", "manil alas", "molave", "moláve", "morón", "muria", "myladf", "nëban", "nevalad ugu mánu",

"nevali adugu", "non", "nowli eragu", "pagil", "pantjar", "popoul romiet", "salingkapa", "samaw buang", "samaw tin pēt", "saphun thong", "ta phun", "tileng", "tin nok", "trasek", and "tumeric lēban". Some of these names are also applied to other species of the genus. For instance, "black lēban" is applied also to V. vestita Wall., "cooked rice leban" to V. gamosepala Griff., "laban kētilōng" to V. glabrata R. Br. and to V. heterophylla var. undulata (Wall.) C. B. Clarke, "lēban" to V. vestita and to V. negundo L., "lēban kunyit" and "tumeric lēban" to V. longisepala King & Gamble and to V. vestita, "lēban bunga" to V. longisepala, and "lēban boenga" to V. heterophylla var. undulata.

Dr. Lam uses the term "pubescent" in many parts of the description where I feel that "puberulent" is more accurate. He includes V. latifolia Blanco in the synonymy of this species, but it actually belongs under V. parviflora A. L. Juss. He gives the erroneous date "1786" for Lam., Encycl. 2: 613 and "1856" for Miq., Fl. Ind. Bat. 2: 862 (actually 1858; cfr. Bull. Jard. Bot. Buitenz., ser. 3, 13: 28). He states that Hallier is right in adopting the name Vitex latifolia as the valid name for this species, but to do so, he says, would "cause confusion". Actually, Lamarck's name is invalidated by the V. latifolia of Miller proposed twenty years earlier.

In addition to collections cited below, Lam cites Horsfield s.n. (Ut--49899) from Java, Heutsz 832 from Borneo, Bruinier 8 and 227 from Sumatra, "Yates 36299" from Tawitawi, and Achmad 1605 from Simalur Island. The species is also reported from Banguay.

Citations: BRITISH GUIANA: A. W. Bartlett s.n. [Lamaka Canal, Sept. 1907] (K, N, U). MADAGASCAR: Boivin s.n. [1847-1852] (P). INDIA: Andhra: Santapau 20906 (Xa); Wagh 3003 (Xa), 3900 (Xa), 3901 (Xa). Assam: Wallich 1747 (T), 1747.2 (S). Khasi States: Hooker f. & Thomson s.n. [Mont. Khasia] (Br, M, S). West Bengal: Helfer 132 (Bt--41023, Bz--25036, Go, N, S); Herb. W. Griffith 6060 (T); Rao 5654 (N): State undetermined: Roxburgh s.n. (Br, Br, N--photo, Z--photo); Voigt s.n. [Ind. orient.] (Cp). BURMA: Tenasserim: C. E. Parkinson 14442 (N); Shaik Mokim 591 (Bz--25039). ANDAMAN ISLANDS: Helfer 6060 (S). INDOCHINA: Cochinchina: G. E. Perry s.n. [7/1870] (S), s.n. [Poulo-condor] (S); Pierre 2224 (S, S). THAILAND: Bunnak 290 [Herb. Roy. Forest Dept. 9360] (Z), 331 [Herb. Roy. Forest Dept. 12087] (Ss); Smitinand 1414 [Herb. Roy. Forest Dept. 7798] (Ss). MALAYA: Langkawi: M. R. Henderson 28943 (Bz--25044). Malacca: W. Griffith s.n. [Malacca, 1845] (Br). Pahang: Corner 25768 (N); M. R. Henderson 10750 (Bz--25037), 18466 (Bz--25038). Penang: Haniff 124 (La). Singapore: N. J. Andersson s.n. [Singapore, 28 Jan. 1853] (S); Collector undesignated s.n. (Bz--25041, Bz--25042, Bz--25043); Kuntze 6086 (N, Qu). PHILIPPINE ISLANDS: Balabac:

Mangubat s.n. [Herb. Philipp. Bur. Sci. 482] (Bz--24880, M). Culion: E. D. Merrill 451 (M), 502 (N). Guimaras: Gammill s.n. [Herb. Philip. Forest Bur. 273] (N). Jolo: Klemme s.n. [Herb. Philip. Forest Bur. 22534] (Cm, Gg--31500). Mindoro: Merritt s.n. [Herb. Philip. Forest Bur. 9800] (N). Palawan: Bermejios s.n. [Herb. Philip. Bur. Sci. 189] (Bz--24881, Gg--31501, N); Curran s.n. [Herb. Philip. Forest Bur. 3486] (Bz--24877), s.n. [Herb. Philip. Forest Bur. 3783] (N); Danao s.n. [Herb. Philip. Forest Bur. 19903] (Bz--24874); Edaño s.n. [Herb. Philip. Bur. Sci. 77441] (N); A. D. E. Elmer 12550 (Bz--24876), 12660 (N, Ut--29525), 13004 (Bz--24875, N, Ut--29521); Escritor 1358 (Bz--24884); Foxworthy 762 (Bz--24879, N, Ut--16457), s.n. [Herb. Philip. Bur. Sci. 762] (Bz--24878); Manalo s.n. [Herb. Philip. Forest Bur. 7412] (Br); E. D. Merrill 1364 (Bz--24883); C. Miranda s.n. [Herb. Philip. Forest Bur. 31380] (N). Sulu: Ramos & Edaño s.n. [Herb. Philip. Bur. Sci. 44138] (N). Tawitawi: Yates s.n. [Herb. Philip. Bur. Sci. 36299] (Bz--24882). RIOUW ARCHIPELAGO: Bakong: Btinnemeijer 7605 (Bz--25017). Bintan: Btinnemeijer 6215 (Bz--25027), 6375 (Bz--25029, Bz--25030). Karimon: Btinnemeijer 7863 (Bz--25025, Bz--25026, Bz--25666). LINGGA ARCHIPELAGO: Singkep: Btinnemeijer 7318 (Bz--25016); Kassim 17 [Boschproefst. BB.4069] (Bz--25015). NIAS ISLAND: Chairoeddin 50 [Boschproefst. BB.5749] (Bz--25023), 52 [Boschproefst. BB.5751] (Bz--25022). SUMATRA: Abdoelmoein 14 [Boschproefst. BB.8944] (Bz--24913); Achmad 1605 (Bz--25031, Bz--25032, Bz--25033); Adam 156 [Boschproefst. BB.9385] (Bz--24920); Ajoeb 15 (Bz--24956); Alfiah 19 [Boschproefst. BB.12290] (Bz--24904, Ut--97168); Alimoesa 14 [Boschproefst. BB.8366] (Bz--24915, Bz--24916, Ut--82000); Asdat 12 (Bz--72933); Bahen Samosir 12 [Boschproefst. BB.29440] (Bz--24899); Bakarroeddin 19 [Boschproefst. BB.9059] (Bz--24912); Bal 12 (Bz--24977), 47 (Bz--24976); Barends B.W.4a [Boschproefst. BB.8421] (Bz--24914), B.W.5a [Boschproefst. BB.8422] (Bz--24924); H. H. Bartlett 8738 (N); Bastiaan 14 [Boschproefst. BB.6063] (Bz--24929); Beguin 399 (Bz--24963, Bz--24964, Bz--24965); Boschwezen 1 (Bz--24986), 2 (Bz--24987); Bruinier 14 (Bz--24953), 73 (Bz--24959), 87 (Bz--24960), 148 (Bz--24962), 183 (Bz--24909), 210 (Bz--24908), 227 [Soeratman 3] (Bz--24961); Btinnemeijer 245 (Bz--24982, Bz--24983); Buwalda 567 [Boschproefst. BB.29975] (Bz--24988, Bz--24989); Collector undesignated 2 (Bz--24943), 14 (Bz--24933, Bz--24934), 16 [Boschproefst. BB.3078] (Bz--24946, Ut--80734), 82 [Boschproefst. BB.608] (Bz--24947, Bz--24948), 322 (Bz--24910), s.n. (Bz--72597); Daalen 478 (Bz--24932); Djamarief 10 [Boschproefst. BB.6621] (Bz--24968); J. M. Dumas 1544 (Bz--24955), 1612 (Bz--24984, Bz--24985); Endert 671 (Bz--24952); H. O. Forbes 1273 (Vu); Galoengi 465

(Bz--24907); Grashoff 610 (Bz--24942, Bz--24944); Gusdorf 7 (Bz--24941), 75 (Bz--24937), 108 (Bz--24958), 131 (Bz--24938), 139 (Bz--24940), 213 (Bz--24939), 235 (Bz--24957); A. Hasan 19 [Boschproefst. BB.7720] (Bz--24928); Heyne s.n. (Bz--24935, Bz--24936); Kohar 7 [Boschproefst. BB.8265] (Bz--24923); Koorders 10482b [147 exp.] (Bz--24990), 10485b [148 exp.] (Bz--24992, Bz--24994), 10588b [14] (Bz--24995, Bz--24996), 10590b [13] (Bz--24997, Bz--24998), 10593b [15] (Bz--25001), 10594b [81] (Bz--25002), 10595b [80] (Bz--25000), 10600b (Bz--24999); Krukoff 314 (Bz--24917), 335 (Bz--24911, N), 4337 (Br, Bz--24906, N); Lörzing 3150 (Bz--24954), 4494 (Bz--24931), 9685 (Bz--24945); Mandaeer Deloeng 181 [Boschproefst. BB.9687] (Bz--24951); Naimoen 19 [Boschproefst. BB.8713] (Bz--24925); Nasir 146 [Boschproefst. BB.9375] (Bz--24981); Oelong 151 [Boschproefst. BB.9380] (Bz--24918); Oemar Hasan 21 [Boschproefst. BB.2978] (Bz--24970, Bz--24971, Ut--80722); Polin Pasariboe 27 [Boschproefst. BB.6456] (Bz--24966, Bz--24967); Posthumus 572 (Bz--24949, Bz--24950), 723 (Bz--24978, Ut--97182); Rasjid 67 [Boschproefst. BB.9143] (Bz--24921); Renwarin 96 [Boschproefst. BB.2838] (Bz--24969); Roderkerk 18 (Bz--24905); Ropi 3 [Boschproefst. BB.8250] (Bz--24927); Saleh 21 [Boschproefst. BB.9319] (Bz--24979, Bz--24980); Sjamsjoeddin 17 [Boschproefst. BB.5966] (Bz--24930); Thorenaar 30.T.1.P.34 (Ut--67822); Toroos 364 (N, N, S), 2367 (N), 4190 (N); Ultée 113 (Bz--24926); Yates 1267 (Bz--24922, N); Zwaan T.3.P.839 (Bz--24972, Bz--24973, Bz--24974, Bz--24975). KARIMANDJAWA ISLANDS: Karimandjawa: Hardjowijono 6 [Boschproefst. Ja.1709] (Bz--24801). MANTAWI ISLANDS: Siberut: Boden-Kloss 14529 (Bz--25019); Iboet 211 (Bz--25020), 324 (Bz--25021). ANAMBAS ISLANDS: Anambas: M. R. Henderson 20343 (Bz--25024). Siantan: Bunnemeijer 5790 (Bz--25028). JAVA: Backer 56 (Bz--24651, Bz--24652, Bz--24653), 1183 (Bz--24659), 1432 (Bz--24659), 3976 (Bz--24632), 10179 (Bz--24699), 11818 (Bz--24657), 16628 (Bz--24706), 17292 (Bz--24698), 17439 (Bz--24697, Ut--58718, Ut--58719), 17870 (Bz--24708), 18081 (Bz--24707), 24104 (Bz--24690), 26374 (Bz--24688, Bz--24689, Ut--53118), 30506 (Bz--24702, Bz--24703, Bz--24704), s.n. [Dec. 1902] (Bz--24627, Bz--24644, Bz--24645), s.n. [Jan. 1904] (Bz--24623, Bz--24642, Bz--24711, Bz--24713), s.n. [Mai 1904] (Bz--24643), s.n. [Sept. 1904] (Bz--24712), s.n. [April 1906] (Bz--24715), s.n. [Bandjar] (Bz--24719); Bakhuizen van den Brink 907 (Bz--24696), 1563 (Bz--24648, Bz--24649, Ut--24869), 3197 (Bz--24686, Bz--24687), 3308 (Ut--24870a), 7423, in part (Bz--24634), 7878 (Bz--24640); Berger 6 (Bz--24641), 12 [Boschproefst. Ja.1256] (Bz--24683), 266 (Bz--24626); Beumée 675 (Bz--24051), 1024 (Bz--24646), 1286 (Bz--24669), 1404 (Bz--24670), 2106 (Bz--24677), 4968 (Bz--

24685); Blokhuis s.n. [April 1919] (Bz--24624, Bz--24625); Blume s.n. [Java] (N, N); C. Boot 400ld (Bz--24635); Boschwezen 9 [Herb. Bot. Var. 358] (Bz--24058), K.21 (Bz--24673, Bz--24674); Buwalda 7441 (Bz--72935); E. W. Clason B.95 (Bz--24682); Clason & Slooten 47 (Bz--24681); Collector undesignated 46 (Bz--24633); De Vries 9 [Boschproefst. BB.10424] (Bz--24903); Docters van Leeuwen-Reijnvaan s.n. [17 October 1910] (Bz--24664); Drowirodihoeda 8/II [Boschproefst. Ja.1635] (Bz--24630); Edeling s.n. [Batavia] (Bz--24660); Franck 128 (Bz--24629); Grutterink 3137 (Bz--24676); H. Hallier 49 (Bz--24052), s.n. (Bz--24671); Herb. Hort. Bot. Bogor. 231 (Bz--24716); Houter 153 (Bz--24717); Jansen 5724a (Bz--24636, Bz--24637); Kalshoven 55 (Bz--24700, Bz--24701); Karta 242 (Bz--24859, N), 311 (Bz--24800); Kartodindhardojo 12/348 [Boschproefst. Ja.1998] (Bz--24680); Kollmann s.n. [Java, 1838] (N); Koorders 47 (Bz--24654), 96a (Bz--25708), 152 (Bz--24655), 7855w (Bz--24832, Bz--25709), 8074t (Bz--25668), 9741b (Bz--24806), 9742b [96a] (Bz--24807, Bz--24808), 9773b [1012a] (Bz--24722), 9774b [1064a] (Bz--24723, Bz--24724), 9775b [1064a] (Bz--24724, Bz--24726), 9776b (Bz--24768), 9777b [1146a] (Bz--24769), 9778b (Bz--24777), 9779b (Bz--24778), 9780b (Bz--24782), 9781b (Bz--24779), 9782b [362] (Bz--24720), 9783b [11a] (Bz--24791), 9784b [96a] (Bz--24809), 9785b [11b] (Bz--24792), 9786b [11c] (Bz--24793), 9787b [11c] (Bz--24797, Bz--24798), 9788b [11f] (Bz--24799), 9789b [11f] (Bz--24800, Bz--24801), 9790b [11f] (Bz--24802, Bz--24803), 9791b [10261] (Bz--24738, Bz--24739), 9792b (Bz--24732), 9793b, in part (Bz--24060), 9794b [6053t] (Bz--24842), 9795b [7801t] (Bz--24734), 9796b [7801t] (Bz--24635), 9797b [7843t] (Bz--24736), 9798b [7862t] (Bz--24824), 9799 [7950t] (Bz--24818), 9800b [8074\*] (Bz--24819), 9801b (Bz--24835), 9802b [8182t] (Bz--24836), 9803b [8186t] (Bz--24839), 9804b (Bz--24833), 9805b (Bz--24830), 9806b (Bz--24812), 9807b (Bz--24831), 9808b (Bz--24814), 9809b (Bz--24813), 9812b (Bz--24780, Bz--24781), 9813b (Bz--24794), 9814b (Bz--24727), 9815b (Bz--24728), 9816b (Bz--24729), 9818b (Bz--24788), 9819 (Bz--24731), 9820b (Bz--24789), 9821b (Bz--24762, Bz--24763), 9822b (Bz--24787), 9823b (Bz--24790), 9824b (Bz--24743), 9826b [7852t] (Bz--24820, Bz--24821), 9827b [7854t] (Bz--24822), 9846b [6067\*] (Bz--24840), 11686b [1782m] (Bz--24730), 11691b [1823m] (Bz--24751, Ut--58720), 11693b [1634\*] (Bz--24753), 11852b [1146a] (Bz--24770), 12248b [1286a] (Bz--24773), 12297b [1294a] (Bz--24772), 12298b [1301] (Bz--24775), 12299b [1290a] (Bz--24774), 12320b [1064a] (Bz--24766), 12805b [6053t] (Bz--24843), 12806b [6126t] (Bz--24844, Bz--25667), 12850 [7854t] (Bz--24823), 12853b [6126t] (Bz--24845), 12856b (Bz--24834), 13104b [4279\*] (Bz--24816), 13164b [7988\*] (Bz--24827, Bz--24828),

13290b [7855\*] (Bz--24841), 13532b [1782m] (Bz--24747), 13535b [1782m] (Bz--24748, Bz--24749), 13595b (Bz--24805), 13713b (Bz--24804), 13747b [523d] (Bz--24756), 14736b (Bz--24815), 15661b (Bz--24761, Ut--64059), 15667b (Bz--24760, Ut--80723), 20060b [1065c] (Bz--24764), 20188b [1207c] (Bz--24785), 20224b [1180c] (Bz--24786), 20270b [1070c] (Bz--24784), 20635b (Bz--24846), 20649b [7801t] (Bz--24733), 21589b [7843t] (Bz--24737), 22558b [1823m] (Bz--24752), 25157b [112c] (Bz--24754), 25291b [96a] (Bz--24810, Bz--25710), 25293b [96b] (Bz--24811, Ut--58722), 25295b [11c] (Bz--24796), 27041b (Bz--24765), 27047b [695\*] (Bz--24776), 28168b [301\*] (Bz--24758), 28169b [293\*] (Bz--24757), 28475b [1026i] (Bz--24740, Bz--24741), 29120b [1266\*] (Bz--24829), 29594b (Bz--24746), 29735b [1673\*] (Bz--24759), 30277b [683\*] (Bz--24085), 32988b [1386\*] (Bz--24826), 33022b [1294a] (Bz--24783), 33110b [1064a] (Bz--24767), 33703b [341f] (Bz--24755), 34100 [1026i] (Bz--24742), 34233b [1146a] (Bz--24771), 35728b [2190\*] (Bz--24744), 35731b [2422\*] (Bz--24745), 36807b [1782m] (Bz--24750), 38901b [855w] (Bz--24817), 39734b [8182t] (Bz--24838), 39772b [8186t] (Bz--24837), 39814b [7854t] (Bz--24825), 42310b [90r] (Bz--24067), 44483b [72] (Bz--24721), s.n. (Bz--25683); Kuntze s.n. [Java, 1875] (N); Lam & Went 1555 (Bz--24148); Martono 31 [Boschproefst. Ja.2280] (Bz--24639); Noltse 3460 (Bz--24667), 4001 (Bz--24675), 4625 (Bz--24665, Bz--24666); Otens 23 (Bz--24647), s.n. [Buitenzorg] (Bz--24661, Bz--24662, Bz--24663); Ploem s.n. (Bz--24695); Saimoendt 38 (Bz--24684); Scheffer s.n. (Bz--24692, Bz--24694, Bz--24718); Slooten 2449 (Bz--24638); Soegandiredja 33 (Bz--24672); Teijsmann s.n. (Bz--24693); Tjokrosondjojo 22 [Boschproefst. Ja.1544] (Bz--24631); Van den Burg 3 [Boschproefst. Ja.3954] (Bz--24656); Van Steenis 11411 (Bz--24619, Bz--24620), 11571 (Bz--72797); Versteegh 27 [Boschproefst. Ja.4912] (Bz--24628); Vorderman s.n. [Batavia] (Bz--24621, Bz--24622); Wagiman 84 [Boschproefst. Ja.1898] (Bz--24678, Bz--24679); Wawra 215 (V, V); E. J. Wind 18 (Bz--24668); Wind Hzn 6203 (Bz--24709); Wisse 99 (Bz--24705, Bz--24710); Zollinger 229 (S). KAMBANGAN: Straelen 12 (Bz--24650). BRITISH NORTH BORNEO: Baker & Baker s.n. [Jan. 26, '15] (Gg--31473); Clemens & Clemens 29842 (Bz--24587); A. D. E. Elmer 20101 (Bz--24580, Bz--24592, Cm, Cn, Du--168114, Ka--67223, S, Ut--82742), 21095 (Br, Bz--24594, Du--164124, N, S, Ut--86375); Evangelista 984 (N). SARAWAK: Clemens & Clemens 21040 [field no. 5139] (Bz--24590, Bz--24591, N), 21055 [field no. 6395] (N); Foxworthy 11 (Cm); Hose 223 (Ph); Native collector 452 (Bz--24606), 519 (Ph), 523 (Ph), 1838 (Ph). BORNEO: Abdulhamid 330 [1509; Boschproefst. BB.15234] (Bz--24589), 1476 [Boschproefst. BB.15201] (Bz--24588); Adan 10 [Boschproefst. BB.2472] (Bz--24607), 34 [z.o.B. 4012;

Boschproefst. BB.13965] (Bz--24593); Atjil 10 [3774; Boschproefst. BB.11620] (Bz--24572); Baderoen 2 [Boschproefst. BB.2621] (Bz--24596); Becking 38 (Bz--24611); Boschwezen 2103 (Bz--24608, Bz--24609, Bz--24610); Buwalda 7965 (Bz--72884); Dachlan 49 [3525; Boschproefst. BB.10727] (Bz--24574); Delmaar 1897 (Bz--24581, Bz--24582); Dunselman 138 (Bz--24569); Endert 1459 (Bz--72886), 1490 (Bz--72883), 3274 (Bz--72885); Haan 922 [Boschproefst. BB. 31014] (Bz--24900); H. Hallier B.790 (Bz--24579), B.903 (Bz--24578), B.926 (Bz--24577); Henar 68 (Bz--25441); Ir. v. W. 12 (Bz--24568); Jaheri s.n. [1893] (Bz--24585, Bz--24586); Jong 52/3/W.B. [Boschproefst. BB.9772] (Bz--24595); Kahar 2008 (Bz--24601, Bz--24602); Kapoeas 2136 (Bz--24600); Labohm 14 (Bz--24605), 1156 (Bz--24603), 1210 (Bz--24604); Moulton 6742 (Bz--24599); Obi 105 [3451; Boschproefst. BB.10587] (Bz--24573); Polak 190 (Bz--73008), 696 (Bz--72858), s.n. (Bz--26601); Polak & Main 1985 (Bz--73009); A. Rasjid 7 [2440] (Bz--24576); Ruttens 8 (Ut--17053, Ut--17054), 406 (Bz--24583, Bz--24584, Ut--22539, Ut--22558), 742 (Ut--40881); Soeriodikarto 5 [2428] (Bz--24575); Thorenaar 30.J.l.P.34 (Bz--24902); Winkler 2156 (Bz--24597, Bz--24598); Zwaan 621 [Boschproefst. BB.12156] (Bz--24570, Bz--24571), s.n. [Boschproefst. 30.J.l.P.34] (Bz--24901). KARIMATA ARCHIPELAGO: Penebangan: Mondi 112 (Bz--72972, Ut--10983a). CELEBES: Boschbouwproefstation 1 (Bz--24893); Gobel 1 [Boschproefst. BB.19394] (Bz--24891); Noerkas 292 (Bz--24886); Pesik 1 (Bz--24892); Riedel 79 (Bz--24895), s.n. [Gorontalo] (Bz--24890); Teijsmann 12361 (Bz--24887, Bz--24888, Bz--24889), 12487 (Bz--24896, Bz--24897), 12526 (Bz--24894); Vuuren 292 (Bz--24885). SALAJAR ISLANDS: Salajar: Bttnemeijer 6572 (Bz--25018). KANGEAN ARCHIPELAGO: Bangko: Backer 29236 (Bz--24850). Kangean: Backer 27163 (Bz--24854), 28115 (Bz--24855, Bz--24856, Bz--24857, Bz--25858, Bz--25681); Dommers 84 (Bz--24847), 144 (Bz--24853). Paliat: Backer 29379 (Bz--24848). Saboenting: Backer 29769 (Bz--24849). Sepapan: Backer 28521 (Bz--24851, Bz--24852). LESSER SUNDA ISLANDS: Bali: Becking 59 (Bz--24863), 68 (Bz--24862). Banka: Anta 340 (Bz--72690), 379 (Bz--72688), 442 (Bz--72693), 481 (Bz--72691), 775 (Bz--72692), 1211 (Bz--73023); Berkhout 402 (Bz--25008); Bttnemeijer 1467 (Bz--25005), 1497 (Bz--25004), 1890 (Bz--25006); Grashoff 76 (Bz--25009, Bz--25010); Hamzah 71 [Boschproefst. 7263] (Bz--25013); Heyne 5 (Bz--25011); Kobus s.n. (Bz--25012); Kostermans 270 [Boschproefst. BB.34196] (Bz--72934); Mohamad 199 [Boschproefst. BB. 11810] (Bz--25003). Billiton: Heyne 11 (Bz--25014). Lombok: Tjptosoesilo 5 [Boschproefst. BB.23328] (Bz--24864). Soemba: Iboet 46 (Bz--24865, Ut--93574). Sumbawa: Daroesman 1 [Boschproefst. BB.10329] (Bz--25439); Indir Alam 2 [Boschproefst.

BB.13984] (Bz--24866); Rensch-Maier 841 (Bz--24867); Sastrodi-hardjo 10 [Boschproefst. BB.6922] (Bz--24868). Timor: Bloembergen 19 [Boschproefst. BB.27071] (Bz--24869); A. O. de Castro 7 (Bz--24873), s.n. (Bz--24871, Bz--24872); Walsh-Held 237 (Bz--24870). CULTIVATED: Belgium: Herb. Martius s.n. [H.B.] (Br). Ceylon: Alston 344 (K). Hawaiian Islands: Kelly 246 (Gg--31499). India: Herb. Hort. Bot. Calcutt. s.n. (Ed, Le, Mu--639, Mu--1132, V); Kurz s.n. [B. H. C.] (Bz--25040); Wallich 1747 (K), 1747/2 (K, K), s.n. (Cp, Cp, Cp, Cp, Cp). Java: Burger 211 [kweekbed 32; moederplant 80; from Nolte 4001] (Bz--24616), 345 [kweekbed 41; moederplant 80; from Nolte 4001] (Bz--24615); Groenhart s.n. [30/8/1939] (Bz--72940, Bz--72941); Herb. Hort. Bogor. 3012 (Bz--24614), III (Bz--24612), XI.G.109 (Bz--25808, N), XI.G.109a (Bz, Bz), XI.J.5 (Bz--25847, Bz, N, Ut, Ut), XI.K.13 (Bz--25860, Bz--25861, Bz--25862, Bz--25863, Bz--26590, Oa, Oa), XI.K.22 (Bz--24613, Bz--25665), s.n. (Bz--24617, Bz--24618, Ut--58761, Ut--58762); E. D. Merrill s.n. [Nov. 1902] (N); Zollinger s.n. [Horti Bogoriensis, 1846] (Br). Madagascar: Boivin s.n. [Hort. Bot. 1847--1852] (P). Réunion: Bréon s.n. [Bourbon] (P). Selangor: Hamid 4915 (K). Singapore: Nur s.n. [Economic Gardens, 9 Sept. 1924] (Ba, Ba). Thailand: Kerr 4455 (K). LOCALITY OF COLLECTION UNDETERMINED: Herb. Weisner s.n. (M); F. Mueller s.n. (Ut--49899).

VITEX PINNATA var. ALATA Moldenke, Phytologia 3: 120. 1949.

Literature: Moldenke, Phytologia 3: 120. 1949; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 2], 137 & 202. 1949.

This variety differs from the typical form of the species in having the petioles usually more or less broadly winged.

The type of the variety was collected by Eugene Poilane (no. 2751) at Nhatrung, Annam, Indochina, on March 9, 1922, and is deposited in the herbarium of the Naturhistoriska Riksmuseet at Stockholm. The Stockholm sheet of Pierre 5216 has only one of the five petioles on the specimen winged, but a duplicate was identified by Dop as "V. limonifolia Wall.", characterized by its alate petioles, so I assume that most, at least, of the petioles on the collection are alate. It is possible that the variety is only a juvenile state of the species, as has been proved to be the case with the alate form of V. altissima L.f.

Citations: INDOCHINA: Annam: Pierre 5216 (S); Poilane 2751 (F--photo of type, N--photo of type, S--type, Sg--photo of type, Z--photo of type), 6259 (Bz--72856, Bz--72857), 6843 (Bz--72936, N). Cambodia: Chatelton s.n. (Bz--72855). JAVA: Backer 24667 (Bz--24691).

VITEX PINNATA f. ANOMALA Moldenke, Phytologia 4: 184. 1953.

This form differs from the typical form of the species in having the leaves mostly 1-foliolate, sometimes 2-foliolate,

even when mature.

The type of this form was collected by H. A. B. Bunnemeijer (no. 1362) at Muntok, Banka, in the Lesser Sunda Islands, on October 10, 1917, and is deposited in the Herbarium Bogoriense at Buitenzorg. Seedlings of the ordinary form of the species apparently also show this character of 1- or 2-foliolate leaves [cfr. Burger 211 and 345, cultivated at the Buitenzorg Botanical Garden], but in the case of the seedlings the leaflets are decidedly serrate-dentate when in this condition. The present form appears to be a mature plant and the leaflets are entire.

Citations: LESSER SUNDA ISLANDS: Banka: Bunnemeijer 1362 (Bz-25007--type, N--photo of type, Z--photo of type).

VITEX POBEGUINI Aubrév., Fl. Forest. Soudano-Guin. 502. 1950.

Literature: Aubrév., Fl. Forest. Soudano-Guin. 502. 1950; Salisb., Ind. Kew. Suppl. 11: 265. 1953.

I know nothing about this species except that the name appears in a key in the work cited above. Presumably it is native to French Guinea and French Soudan.

VITEX POGGEE Gürke in Engl., Bot. Jahrb. 18: 168. 1893.

Literature: Gürke in Engl., Bot. Jahrb. 18: 168. 1893; J. G. Baker in Thieselt.-Dyer, Fl. Trop. Afr. 5: 329. 1900; Durand, Syllog. Fl. Congol. 437. 1909; Pieper in Engl., Bot. Jahrb. 62, Beibl. 141 ["142"]: 52, 73, & 84, pl. 11. 1928; Worsdell, Ind. Lond. Suppl. 2: 500. 1941; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 1], 49 & 104. 1942; H. N. & A. L. Moldenke, Plant Life 2: 76. 1948; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 2], 115 & 202. 1949.

Illustrations: Pieper in Engl., Bot. Jahrb. 62, Beibl. 141 ["142"]: pl. 11. 1928.

A shrub; branchlets glabrous; leaves 5-foliolate, long-petiolate; leaflets short-petiolulate, the blades coriaceous, oblong, acute or acuminate at the apex, quite glabrous on both surfaces, the central one 15--17.5 cm. long and 5--6.5 cm. wide, usually about 2 1/2 times as long as wide; cymes axillary, long-pedunculate, lax, few-flowered; pedicels short; bractlets linear; calyx campanulate, about 6 mm. long, pubescent, its rim dentate, the teeth deltoid, about 2 mm. long, half as long as the tube; fruit drupaceous, globose, pubescent at the apex.

The species is based on a specimen collected by Karl Pogge (no. 1255) -- in whose honor it is named -- probably in Lunda, Belgian Congo, or in Angola, between 1882 and 1894.

VITEX POLYGAMA Cham., Linnaea 7: 371--373. 1832.

Synonymy: Casarettoa mollissima Walp., Repert. 4: 91. 1844.

Vitex polygama var. holosericea Schau. in Mart., Fl. Bras. 9:

300--301. 1851. Vitex polygama Cham. & Schlecht. ex Turcz., Bull. Soc. Nat. Imp. Mosc. 36 (2): 225. 1863. Ildefonsia digitata Schott f. ex Moldenke, Prelim. Alph. List Invalid Names 28, in syn. 1940. Vitex tarcoma Clausen ex Moldenke, Prelim. Alph.

List Invalid Names 52, in syn. 1940. *Vitex lanata* Cham., in herb. [not *V. lanata* Sessé & Moc., 1940]. *Vitex flavens* Kit., in herb. [not *V. flavens* H.B.K., 1818]. *Vitex polygania* Cham., in herb.

Literature: H.B.K., Nov. Gen. & Sp. Pl. 2: 246. 1818; Cham., Linnaea 7: 371--373. 1832; Walp., Repert. 4: 91. 1844; Schau. in A. DC., Prodr. 11: 693. 1847; Schau. in Mart., Fl. Bras. 9: 300-301. 1851; Turcz., Bull. Soc. Imp. Nat. Mosc. 36 (2): 225. 1863; Hayek, Denkschr. Kais. Akad. Wissen. Math.-nat. 79 (1): 296. 1908; Glaz., Bull. Soc. Bot. France Mém. 3: 547. 1911; F. C. Hoehne, Bot. e Agr. Bras. Sec. XVI: 243 & 357. 1937; Moldenke, Alph. List Common Names 21, 29, & 31. 1939; Moldenke, Geogr. Distrib. Avicenn. 27 & 40. 1939; Moldenke, Prelim. Alph. List Invalid Names 14, 28, 51, & 52. 1940; Hoehne, Kuhlmann, & Handro, O Jard. Bot. S. Paulo 579. 1941; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 1], 39, 75, & 104. 1942; M. Kuhlmann, Instit. Bot. Observ. Ger. Contrib. 5: 19 & VIII. 1942; Moldenke, Alph. List Invalid Names 12 & 27. 1942; Moldenke, Phytologia 2: 121. 1944; F. C. Hoehne, Frut. Indig. 79. 1946; Kuhlmann & Kuhn, Fl. Distr. Ibiti 117 & 182. 1947; F. C. Hoehne, Relat. Anual Inst. Bot. 87. 1947; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 2], 95, 166, & 202. 1949; H. N. & A. L. Moldenke, Anal. Inst. Biol. Mexico 20: 15. 1949; Stellfeld, Trib. Farmac. 19 (10): 170--171. 1951.

Shrub or tree, to 20 m. tall; trunk to 15 cm. in diameter; branches rather stout, gray-brown, subterete or very obtusely tetragonal-flattened, medullose, short-pubescent throughout, less so in age, mostly somewhat ampliate at the nodes; branchlets and twigs mostly medium-stout, usually conspicuously flattened, ampliate at the nodes, densely tomentose or villose with flavescent, ferruginous, or sordid (often velutinous) hairs; nodes usually rather obscurely annulate; principal internodes 1--9.5 cm. long; leaves decussate-opposite, 5- (rarely 3-) foliolate, practically mature (at least as to size) at time of anthesis; petioles stout, 3.5--17 cm. long, densely tomentose or villous like the twigs, convex beneath, flattened above, often somewhat compressed, usually discoid at the apex, slightly ampliate at the base; leaflets subequal or the two lowermost somewhat smaller or even considerably reduced, all usually short-petiollulate with petiolules 1--14 mm. long, those on the central leaflets often considerably longer than the lateral ones, all more or less margined and densely tomentose or villous like the twigs; leaflet-blades submembranous or thin-chartaceous when young, subcoriaceous in age, dark-green above (often brunnescent in drying), sordid-yellowish or ferruginous beneath, the central one elliptic or oblong, varying to slightly subobovate or obovate, 5.5--22 cm. long, 1.7--10 cm. wide, acute or short-acuminate at the apex, entire or slightly undulate-repand along the margins (rarely coarsely serrate on shoots), acute or acuminate at the base, densely short-pubescent or velutinous above, very densely matted-tomentose or villous with sordid, yellowish, or ferruginous hairs beneath,

the lateral ones similar to the central one in all respects except size and sometimes more or less asymmetrical or inequilateral; midrib slender, flat or subimpressed and usually more densely pubescent above, prominent beneath; secondaries slender, 8--17 per side, arcuate-ascending, often rather straight or arcuate only near the margins, flat or subimpressed above, prominent beneath, often hidden in the dense tomentum, rather obscurely joined at the margins; vein and veinlet reticulation abundant, obscure or indiscernible above (on young leaves) or subimpressed (on old leaves), only the larger portions prominent beneath, usually hidden by the tomentum; inflorescence axillary, cymose, abundant, 3.5--7.5 cm. long, 2--4.5 cm. wide, usually rather few-flowered but dense, 1 or 2 times furcate, conspicuously bracteolate, densely tomentose, subvillous, or long-pubescent throughout with sordid, yellowish, or ferruginous hairs (often velutinous when young); peduncles slender or stoutish, to 5 cm. long or very much reduced, usually decidedly flattened, tomentose or villous like the twigs; pedicels stout and to 1 mm. long or obsolete; bractlets numerous, oblong or lanceolate, to 2 cm. long and 3 mm. wide, sessile, dark above, light beneath, densely pubescent; prophylla linear, obscured by the bractlets and the large sessile or subsessile flowers; calyx herbaceous, campanulate or obconic, densely velutinous-villous with flavescenscent or ferruginous hairs, the tube 6--8 mm. long, 4--6 mm. wide, its rim deeply 5-lobed, the lobes lanceolate, 2--4.8 mm. long, long-acuminate; corolla hypocrateriform, varying from blue or pale-violet to rose, white or yellow in the throat, its tube broadly cylindrical, about 1.5 cm. long, 3.5--5 mm. wide, very slightly amplicate at the apex, densely flavescenscent-tomentellous above the calyx on the outside, its limb 1--1.5 cm. wide, conspicuously 2-lipped, the 4 smaller lobes oblong-lanceolate, about 5 mm. long, obtuse, the central lower lobe much enlarged, about 1 cm. long and 6--7 mm. wide, undulate-crisped along the margins, bearded toward the base, otherwise puberulent on both surfaces; stamens and style exerted about 5 mm. from the corolla-throat; fruiting-calyx thin-textured, hardly changed, brunnescent inside, its 5 lobes about 5 mm. long, densely pubescent on both surfaces; fruit drupaceous, black or reddish-black, elliptic or spherical, succulent, to about 1.5 cm. long and wide.

This widespread and well-known Brazilian species was based by Chamisso on three Sellow collections, one marked "♂", one marked "♀", and the third in fruit. Walpers cites Clausen 396 in his original publication of Casarettoa mollissima, but actually this name is merely a new name for Chamisso's Vitex polygama and therefor is based on the same cotypes as the latter name. Glaziou, in the reference cited above, given in addition to the numbers cited below his numbers 5959, 7788, and 14344 for this species. The last-mentioned of these is probably a typographic error for number 15344, cited below, while 5959 is actually the type collection of var. glaziovii Moldenke and 7788 is var. hirsuta Schau. Schauer cites a Riedel collection in the Leningrad

herbarium from São Paulo and Blanchet 3434, but the latter is V. rufescens A. L. Juss. In fact, V. rufescens is often regarded as being conspecific with V. polygama, as, for instance, by Schauer in A. DC., Prodr. 11: 693 (1847), but has proved to be amply distinct. A key for the separation of this from related forms follows:

1. Calyx-rim merely dentate.
  2. Leaflets 3, the blades abruptly acute at the base.
    3. Pubescence on upper leaflet-surface very long and dense during anthesis.....V. rufescens.
    - 3a. Pubescence on upper leaflet-surface sparse during anthesis.....V. rufescens var. abludens.
  - 2a. Leaflets 5, the blades attenuate to the base.
    4. Mature leaflet-blades chartaceous; hairs on the petioles and young leaflets about 1 mm. long.....V. panshiniana.
    - 4a. Mature leaflet-blades subcoriaceous; hairs on petioles and young leaflets about 2 mm. long.....  
V. panshiniana var. pulchra.
- 1a. Calyx deeply lobed or lacinate.
  5. Leaflets 3.....V. regnelliana.
  - 5a. Leaflets 5.
    6. Pubescence shaggy-hirsute; lower leaflet-surface densely long-hirsute on the midrib and secondaries, sparsely so on the lamina.....V. polygama var. hirsuta.
    - 6a. Pubescence tomentose-villous; lower leaflet-surface villous, tomentose, velutinous, or short-pubescent.
      7. Calyx-lobes greatly attenuate, 5-8 or more mm. long.
        8. Fruit hard, not fleshy; calyx-lobes lanceolate.....  
V. polygama var. dusenii.
        - 8a. Fruit very fleshy; calyx-lobes linear.....  
V. polygama var. glaziovii.
      - 7a. Calyx-lobes not greatly attenuate during anthesis, mostly triangular, usually only to 4.8 mm. long.
        9. Leaves at anthesis all very immature, very densely flavescent- or rufescent-velutinous throughout.....  
V. polygama var. warmingii.
        - 9a. Leaves at anthesis mostly quite fully expanded.
          10. Leaflets distinctly petiolulate.....V. polygama.
          - 10a. Leaflets sessile, acuminate or attenuate-winged to the base.....V. polygama var. bakeri.

The best flowers in full anthesis, showing their true large size, are seen on Dusén 17380, Herb. Inst. Butantan 2564, Hoehne pl. viv. 163, and Mosén 4325. The transition between thin-chartaceous young leaves (at time of anthesis) to subcoriaceous old ones is well shown on Herb. Rio de Janeiro 22527 in the United States National Herbarium. The Copenhagen sheet of Glaziov 5958 exhibits two apparently 2-foliate leaves, but it seems almost certain that these leaves were 3- or even 5-foliate originally, as those on all the other examined sheets of this col-

lection are. The size of the bractlets, calyx, calyx-lobes, and corollas and the amount of pubescence on the twigs, petioles, peduncles, leaflets, and inflorescences vary tremendously, as do also the size and fleshiness of the fruit. The leaflets vary from very short- to very long-petiolulate. Dusén 15401 in the Stockholm herbarium and in the United States National Herbarium exhibits the 3 central leaflets serrate (mostly only above the middle), but these specimens are obviously taken from sterile suckers or shoots.

The species inhabits campos, especially campo cerrado, primeval forests, capoeira, and sandy clearings, ascending to 1500 meters in Minas Gerais. Frambach describes it as "rare", but judging from the wealth of specimens and literature this does not seem to be true, except perhaps locally. It has been collected in anthesis from September to January and in June, and in fruit from December to June. It has been confused in herbaria with V. taruma Mart., V. flavens H.B.K., V. montevidensis Cham., and V. regnelliana Moldenke. Hoehne, Kuhlmann, & Handro state that in the São Paulo Botanical Garden it flowers from October to December and fruits from April to June, the fruits being much relished by parrots.

Common names recorded for it are "azetona do campo", "cha de 5 folhas", "maria preta", "Maria-Preta", "tarumã", "taruman", "tarumão", "tarumaõ", and "velame do campo". Hoehne, in his Frut. Indig. 79 (1946) says: "Ainda nos recordamos como, quando menino, ficavamos escondidos sob os ramos de árvores do pomar de casa, para esperarmos periquitos que vinham comer essas preciosas negras drupas da 'Maria-Preta' — Vitex polygama, que no pomar havia sido poupada, para, entre as fruteiras exóticas, apresentar a fatura para ditos psitacideos. Tão entretidas ficavam as aves no banquete, que podíamos passar-lhes o laço de cerdas de rabo de cavalo por sobre a cabeça, sem que notassem o movimento da ponta do bambú ou ainda sentissem o instrumento, antes de serem puxadas para baixo. Essas drupas, um pouco maiores do que cerejas, aparecem em tal profusão nesta planta, que ela toda se mostra negra entre o verde da folhagem."

Kuhlmann & Kühn call the species a hyllophyte, and cite M. Kuhlmann 249 from Alto do Morro, Estação Experimental, a specimen unfortunately not yet seen by me. They also say: "Flores azuis entre Novembro e Dezembro muito procuradas pelas 'Mamangabas' e outras 'Abelhas' silvestres e, provavelmente pela doméstica. Drupas comestíveis, embora del sabor pouco convidativo, com carocas grandes e pétreas. Há numerosos exemplares desta espécie nativos no Jardim Botânico e Parque do Estado, onde tivemos ocasião de verificar que, na época do amadurecimento dos frutos, que vae de Marco a Maio, essas arvores sao frequentadas por diversos pássaros frugívoros, como os 'Sabiás' e 'Sanhacos'. Ficamos bastante surpreendidos certa ocasião quando verificamos que um bando de 'Jacús' nao se intimidava de aproximar-se das habitacoes aféxistentes, atraído pelos frutos de um vetusto 'Taruma', cujos carocos inteirós foram encontrados nas dejeções. Já os encontramos também

nas dejeocos de um CA-NIDEO nao identificado. Só nao os encontramos ainda nos excrementos dos 'Guaribas'. Loeffgren....afirma que os frutos do 'Taruma' que cresce a beira dos rios."

Concerning the Campos Novaes 914 and 915, cited below, Hayek says: "Die mir vorliegenden Exemplare sind in Bezug auf Indument und Blattform nicht ganz übereinstimmend. Das eine ist überall dicht seidig filzig, beim zweiten ist das Indument bedeutend weniger dicht und die Blättchen sind schmaler. Doch scheint Vitex polygama diesbezüglich stark zu variieren, wir aus dem mir vorliegenden reichen Material des naturhistorischen Hofmuseums hervorgeht. Die charakteristische Kelchform ist beiden Exemplaren gemeinschaftlich."

Stellfeld says that "cuja madeira é usada para construções civis."

Citations: BRAZIL: Espirito Santo: Saint-Hilaire B<sup>2</sup>.256 (P). Federal District: Alston & Lutz 142 (N). Minas Gerais: Ackermann s.n. [Barbacena, 1840] (Br); Black & Mendes Magalhães 51-11955 (Z), 51-11964 (Be-69787); P. Clausen 26 (Bm), 30 (Cb, Dc-888), 396 (B, B, B, B, Bm, Br, Cb, Cb), 1396 (E-116181, V, X), 1453 (P, P, P), 1454 (P, P), s.n. [1840] (B, B, Bm, Br, Br, Br, Br, Br, Cb, F-600403, F-876861, K, N), s.n. [1843] (Bm, V), s.n. (Dc-885); Frambach 110 (Cb, F-670042, N); Herb. Rio de Janeiro 5954 (N); Heringer 51 (N, Sp-39027), s.n. [Nov. 26, 1910; Herb. Rio de Jan. 46732] (N); Martius s.n. [Taboteiro] (Mu-672); Mello Barreto 8113 [Herb. Jard. Bot. Belo Horiz. 23290 & 23291] (F-932773, N), 8115 [Herb. Jard. Bot. Belo Horiz. 23297] (F-933047 10709 [Herb. Jard. Bot. Belo Horiz. 31834] (N), 23291 (N); Mendonca 1274 (B); Mosén 973 (S), 4325 (S); Regnell II.212 [Cabo Verde] (S), II.212 [Caldas, 1842] (P, Ut, Vu), II.212 [1856] (B, Br, Mu-1524), II.212 [1861] (B, K, S, W-274930), II.212 [1864] (Cp, Lu, Ol, Ol), II.212 [1866] (W-1323356), II.212 [Caldas, Sept. 30, 1869] (N, P, P, S), II.212 [1874] (S), II.212c (S, S), II.212e (S, S); Schwacke 8814 (B), 8816 (B); Stephan s.n. (Br); Warming 499 (Cp), s.n. [Lagoa Santa] (Bm, Cp, Cp, Cp, E-116085, It, Le, N, Ol, S, Vt), s.n. [Olho de Pavia] (Ol); Weddell 1260 (P), s.n. [1844] (P); Widgren s.n. [1845] (N, S, W-1323358); Williams & Assis 6732 (G, N). Pará: Ducke 3027 (Cb); J. G. Kuhlmann s.n. [Herb. Rio de Jan. 22527] (B, S, Ut, W-1517707). Paraná: Dusén 10175 (N, S), 15401 (B, S, W-1481792), 16492 (B, Cb, S, S, W-1481793), 17380 (E-908135, G, S). Rio de Janeiro: Glaziou 3680 (Br, Cp, P), 5958 (B, B, Cp, Cp, F-538496, P, P, S, W-1112476), 6049 (B, Cp, P), 11321 (B, Cp, P), 15344 (B, B, Br, Bz-24567, Cp, K, P, P); Miers s.n. (Bm); Schenck 2285 (B). São Paulo: Campos Novaes 914 (Vu, W-389886), 915 (Sp-2215, Vu); Curran 8 (W-920330); Drecker 5 (Sp-42194); Edwall s.n. [São Paulo, Nov. 4, 1893; Herb. Comm. Geogr. & Geol. 655] (Cp, N, Sp-15601); Gaudichaud 276 (P), s.n. [Herb. Imp. Brasil 42]

(P); Guillemin 506 (Cb, P, P); Heiner 271 (N, S, S); Herb. Comm. Geogr. & Geol. s.n. [Herb. Rio de Jan. 31583] (N); Herb. Inst. Butantan 2564 (G); Herb. Lab. Ensaio Mat. Polytec. 4 (K, Sp—32854, Sp); F. C. Hoehne s.n. [Araça, Oct. 27, 1918] (N, Sp—2546); W. Hoehne 1330 (N), 2430 (N); Hoehne & Gehrt s.n. [Campo Largo, Nov. 10, 1936] (N, Sp—36758); Houillet 742 (Br); Kiehl s. n. [Herb. Inst. Agron. Est. S. Paulo 5194] (Sp—44293); Koscinski 3 [Herb. Serv. Florest. 99] (Sf); M. Kuhlmann s.n. [Jardim Botânico, April 1945] (N, Sp); Lüfgren s.n. [Hapetinga, Nov. 6, 1887; Herb. Comm. Geogr. & Geol. 318] (Cp, N, Sp—15602); Mosén 3449 (N, P, S, S); F. Noack s.n. [Campinas] (B); Pedroni s. n. [Loreto, Oct.-Nov.; Herb. Serv. Fl. Comp. Paul. Estr. Ferro 199; Herb. Rio de Jan. 31570] (It, N, Sp—15599); D. I. Stehle 1009 (Sf), s.n. [Helvetia, Nov. 10, 1943; Herb. Serv. Florest. S. Paulo 1009] (W—1564394); Tamandaré & Brade 7453 (B, B); A. P. Viégas s.n. [Herb. Inst. Agron. Est. S. Paulo 5310] (Sp—44296). State undetermined: Burchell 4097 (K, K, P); Collector undesignated s.n. [Herb. Jacq.] (V), s.n. (N, V, V); Herb. Martius s.n. (Br); Land s.n. (Cp); Lépone s.n. [Brésil] (N); J. E. Pohl s.n. [Brasília] (Br, N, V, V, V, V, V); Saint-Hilaire 3 (P); Schott 6149 (V); Sellow 267 (B, B, B), 302 (B), 324 (B), 5571 (B, B), s.n. [Brasília; fructifera; Machride photos 17565, in part] (B—cotype, B—cotype, F—663044, in part—photo of cotype, Kr—photo of cotype), s.n. [♂] (B—cotype, B—cotype, B—cotype), s.n. [♀] (B—cotype, B—cotype), s.n. (B, B, B, B); Weddell s.n. [1858] (Cb). CULTIVATED: Brazil: F. C. Hoehne pl. viv. 163 (A, It, N, S, Sp—28546, Ug, Y—23819); Pickel 2135 (N, Sf); Usteri s.n. [Avenida Paulista, Nov. 18, 1906; Herb. Esc. Polit. S. Paulo 249b] (N, Sp—15604).

VITEX POLYGAMA var. BAKERI Moldenke, Alph. List Common Names 20, hyponym (1939); Phytologia 1: 489. 1941.

Literature: Moldenke, Alph. List Common Names 20. 1939; Moldenke, Geogr. Distrib. Avicenn. 27 & 40. 1939; Moldenke, Phytologia 1: 489. 1941; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 1], 39, 75, & 104. 1942; Moldenke, Phytologia 2: 121. 1944; H. N. & A. L. Moldenke, Plant Life 2: 49. 1948; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 2], 95, 166, & 202. 1949.

This variety differs from the typical form of the species in its five leaflets being long-acuminate or attenuate at the base and sessile; the pubescence throughout is also usually more silky-velutinous or hirsute and ferruginous.

The type of the variety was collected by Charles Fuller Baker (no. 281) — in whose honor it is named — in the vicinity of Pará, Brazil, on February 20, 1908, and is deposited in the herbarium of the Botanisch Museum at Utrecht. It has been confused with var. hirsuta Schau. by Taubert and with V. flavens H.B.K. by Huber. It has been collected in anthesis in January, Febru-

ary, and July to September. A vernacular name is "mamma cachorro de catinga".

Citations: BRAZIL: Espírito Santo: Glaziou 11322, in part (B, Cp, K, N, P). Maranhão: Lisboá 2499 (Cb). Pará: C. F. Baker 281 [Macbride photos 34302] (B—isotype, Bm—isotype, Cb—isotype, F—976257—photo of isotype, K—isotype, Kr—photo of isotype, Le—isotype, Mu—4256—isotype, N—photo of type, N—photo of isotype, P—isotype, Po—64790—isotype, S—isotype, Ut—type, V—isotype, X—isotype, Z—photo of type); Huber 174 (X, X, X, X, X, X, X, X); Sampaio 5652 [Herb. Mus. Nac. Rio de Jan. 19244] (B). CULTIVATED: Brazil: Herb. Amaz. Mus. Para. 9253 (Cb, N); Glaziou 9985 (K, P).

VITEX POLYGAMA var. DUSENII Moldenke, Geogr. Distrib. Avicenn. 27, nom. nud. (1939); Phytologia 1: 489—490. 1941.

Synonymy: Vitex organocensis Briq. ex Moldenke, Prelim. Alph. List Invalid Names 51, in syn. 1940. Vitex organocensis Briq., in herb. Vitex organocensis Briq., in herb.

Literature: Moldenke, Geogr. Distrib. Avicenn. 27. 1939; Moldenke, Prelim. Alph. List Invalid Names 51. 1940; Moldenke, Phytologia 1: 489—490. 1941; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 1], 39 & 104. 1942; H. N. & A. L. Moldenke, Plant Life 2: 57. 1948; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 2], 95 & 202. 1949; Stellfeld, Trib. Farmac. 19 (10): 170. 1951.

This variety differs from the typical form of the species in its long-attenuate and lanceolate foliaceous calyx-lobes which are 5—8 mm. long or longer and greatly resemble the very conspicuous foliaceous bractlets that surround and equal them in the dense and congested cymes. The fruit is apparently hard, rather than fleshy, and the plant is said to be a tree 5 m. tall.

The type of the variety was collected by Per Karl Hjalmar Dusén (no. 16111) — in whose honor it is named — at the margins of primeval woods in the littoral region at Jacarehy, Paraná, Brazil, on December 13, 1914, although some specimens of what is obviously the same collection are dated "March 18, 1915", and is deposited in the herbarium of the Botaniska Avelningen, Naturhistoriska Riksmuseet, at Stockholm. The variety has been collected in anthesis in March and December, and in fruit in January. Mello Barreto records the common name "marie preta". Some sheets of Gardner 582 are intermediate between this variety and typical V. polygama Cham. and also show some characters of var. hirsuta Schau. This seems to indicate that the so-called varieties of this species are not very well-defined or constant. Gardner calls it a "large tree with light-blue flowers".

Citations: BRAZIL: Minas Gerais: Mello Barreto 8115 [Herb. Jard. Bot. Belo Horiz. 23295] (N). Paraná: Dusén 16111 (B—isotype, Cb—isotype, E—1036549—isotype, E—photo of type, F—668446—isotype, G—isotype, K—isotype, Lu—isotype, N—iso-

type, N—photo of type, S—type, S—isotype, W—1481794—isotype, Z—photo of type). Rio de Janeiro: G. Gardner 582 [Macbride photos 24703] (Bm, Cb, Cb, Ed, F—24703—photo, F—86909, G, K, K, Kr—photo, M, N, N—photo, S, V, V, W—106638h, X), 582bis (K); Peckolt 292 (V). State undetermined: Bowie & Cunningham A.16 (N, S); Burchell 3461-2 (K, P); Nunes 329 [Herb. Rio de Jan. 47933] (N); Saint-Hilaire 53 (P).

VITEX POLYGAMA var. GLAZIOVII Moldenke, Geogr. Distrib. Avicenn. 27, nom. nud. (1939); Phytologia 1: 490. 1941.

Literature: Moldenke, Geogr. Distrib. Avicenn. 27. 1939; Moldenke, Phytologia 1: 490. 1941; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 1], 39 & 104. 1942; H. N. & A. L. Moldenke, Plant Life 2: 61. 1948; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 2], 95 & 202. 1949.

This variety differs from the typical form of the species in having its calyx-lobes very narrow and elongate, linear or sub-linear to oblong, 5—10 mm. long, resembling the bractlets, and in its very fleshy fruits with small central endocarp, the fleshy portion being almost 2 cm. long and wide and the stony endocarp only about 11 mm. long and 6 mm. wide.

The type of this variety was collected by Auguste François Marie Glaziou (no. 5959) — in whose honor it is named — at Restinga de Mauá, in the Organ Mountains, Rio de Janeiro, Brazil, between 1861 and 1887, and is deposited in the herbarium of the Royal Botanic Gardens at Kew. The variety is known thus far only from the original collection.

Citations: BRAZIL: Rio de Janeiro: Glaziou 5959 (B—isotype, K—type, P—isotype).

VITEX POLYGAMA var. HIRSUTA Schau. in Mart., Fl. Bras. 9: 300—301. 1851.

Literature: Schau. in Mart., Fl. Bras. 9: 300—301. 1851; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 1], 39 & 104 (1942) and [ed. 2], 95 & 202. 1949.

This variety differs from the typical form of the species in having the pubescence on its branchlets, twigs, peduncles, petioles, leaflets, and inflorescences decidedly hirsute, often shaggy. It is mostly much sparser on the leaflet-blades, conspicuously densest on the midrib and secondaries and the ciliate margins. The leaflets are usually also decidedly nigrescent in drying, the blades apparently uniformly membranous.

The variety was based by Schauer on a collection made by Friedrich Sellow near Vittoria, Espirito Santo, Brazil, and one made by Johann Emanuel Pohl (no. 6148) somewhere in Brazil. It has been collected in anthesis in August, September, and November.

Citations: BRAZIL: Espirito Santo: Sellow s.n. [Macbride photos 17565, in part] (B—cotype, B—cotype, F—663044, in part—photo of cotype, Kr—photo of cotype, N—photo of cotype). Minas Gerais: Saint-Hilaire B2.2208 bis, in part (P). Rio de

Janeiro: Glaziou 7788 (B, Cp, G, K, P, P); Schwacke 7012 (Cb); Ule 4344 (B). São Paulo: Brade 8196 (Ja--22886). State undetermined: Bowie & Cunningham s.n. (Bm, Bm, Bm); Herb. Persoon s.n. (Le, N); Herb. Schott s.n. (Vu); J. E. Pohl 6148 [Macbride photos 34301] (F--976256--photo of cotype, Kr--photo of cotype, N--cotype, N--photo of cotype, N--photo of cotype, N--photo of cotype, S--photo of cotype, V--cotype, V--cotype, V--photo of cotype, Z--photo of cotype); Sellow 807 (B), 1029 (B).

VITEX POLYGAMA var. WARMINGII Moldenke, Geogr. Distrib. Avicenn. 27, nom. nud. (1939); Phytologia 1: 490. 1941.

Synonymy: Vitax polygama var. warmingii Moldenke, Indic.

Taxon. Ass. Sudam. Fitotax. 1 (2): 3, sphalm. 1941.

Literature: Moldenke, Geogr. Distrib. Avicenn. 27. 1939; Moldenke, Phytologia 1: 490. 1941; Indic. Taxon. Ass. Sudam. Fitotax. 1 (2): 3. 1941; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 1], 39 & 104. 1942; H. N. & A. L. Moldenke, Plant Life 2: 88. 1948; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 2], 95 & 202. 1949.

This variety differs from the typical form of the species in its leaves being very immature at time of anthesis and equaled in length by the cymes, and the pubescence throughout being very conspicuously flavescent or ferruginous and velutinous-silky, especially on the leaves, where it is very lustrous.

The type of the variety was collected by Johannes Eugenius Btlow Warming (no. 23/967) — in whose honor it is named — at Lagoa Santa, Minas Gerais, Brazil. It resembles V. regnelliana Moldenke very much in habit, general appearance, and pubescence, but the leaflets are uniformly 5, instead of only 3 as in that species.

Citations: BRAZIL: Minas Gerais: P. Clausen 205, in part (P); Mello Barreto 9506 (Ja--32264); Regnell II.212 [1869], in part (P); Warming 23/967 (Cp--type, N--photo of type, Z--photo of type), s.n. [Lagoa Santa] (Bm, N--photo, Z--photo); Weddell s.n. (N). State undetermined: J. E. Pohl 6057 (N, V, V).

VITEX POOARA Corbishley, Kew Bull. 1920: 333. 1920.

Literature: Corbishley, Kew Bull. 1920: 333. 1920; E. E. Galpin, Bot. Surv. S. Afr. Mem. 7: 23, 25, & 26. 1925; Pieper in Engl., Bot. Jahrb. 62, Beibl. 141 ["142"]: 47, 60, & 84. 1928; I. C. Verdoorn, Union S. Afr. Dept. Agr. & Forest. Bull. 185: 45--46. 1928; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 1], 51, 52, & 104 (1942) and [ed. 2], 120, 122, & 202. 1949.

A small shrubby tree, to 5 m. tall; trunk to 15 cm. in diameter; branches spreading; leaves 5--7-foliolate; petioles as long as or longer than the central leaflet, tomentose; leaflet-blades obovate, 2.5--8 cm. long, 0.6--4 cm. wide, more or less pubescent; inflorescence axillary, cymose; peduncles and pedicels tomentose; calyx campanulate, about 2.5 mm. long during anthesis, persistently tomentose outside, the rim shortly 5-

lobed; corolla varying from mauve or bluish-mauve to violet or brilliant purple, bilabiate, about 8 mm. long; fruiting-calyx enlarged, about 6 mm. long, cupuliform, persistent, sometimes like an acorn cup; fruit drupaceous, very dark-purple or black when ripe, about 1.8 cm. long and 8 mm. wide, edible, the juice staining dark-purple or black.

The species is said to be occasional in sand veld "on the southwestern border of the flats", according to Galpin. Verdoorn says it is plentiful in the Waterberg and it has been recorded from the Zoutpansberg district. Mogg & Phillips found in growing on quartz conglomerate at an altitude of 3200 feet. It is the only species in Transvaal to bear edible fruit. Reports indicate that in the proper season the lips of the natives are stained purplish-black from eating quantities of this fruit. The timber, however, is reported to be of no value. Common names recorded are "mphuru", "pooara", "stinkbessie", and "stinkbossie". It has been collected in anthesis in February. It has been identified as "V. madiensis var." by Chase, while Dr. Meeuse, in a letter to me dated December 9, 1953, indicates his belief that it is conspecific with V. harveyana H. H. W. Pearson. Pieper cites in addition Burt-Davy 1722, Pole-Evans 19671, and Rehmann 5466 from Transvaal.

Citations: SOUTHERN RHODESIA: N. C. Chase 1965 (N, Rh--27164); Levy 73 [Herb. Queen Victoria Memorial 7974] (La, N--photo, Rh, Z--photo). UNION OF SOUTH AFRICA: Transvaal: L. E. Codd 983 (Z); Mogg & Phillips s.n. (Z).

VITEX PSEUDOCHRYSOCARPA Pieper in Engl., Bot. Jahrb. 62, Beibl. 141 ["142"]: 68 & 84, pl. 9. 1928; Fedde, Repert. 26: 164--165. 1929.

Synonymy: Vitex chrysocarpa Baker, in part, ex Pieper in Engl., Bot. Jahrb. 62, Beibl. 141 ["142"]: 68, in syn. 1928 [not V. chrysocarpa Planch., 1849, nor DC., 1940].

Literature: J. G. Baker in Thiselt.-Dyer, Fl. Trop. Afr. 5: 325. 1900; Pieper in Engl., Bot. Jahrb. 62, Beibl. 141 ["142"]: 50, 68, & 84, pl. 9. 1928; Pieper in Fedde, Repert. 26: 164--165. 1929; Hill, Ind. Kew. Suppl. 8: 249. 1933; Worsdell, Ind. Lond. Suppl. 2: 500. 1941; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 1], 47 & 104 (1942) and [ed. 2], 113 & 202. 1949.

Illustrations: Pieper in Engl., Bot. Jahrb. 62, Beibl. 141 ["142"]: pl. 9. 1928.

Branchlets obtusely angular, flavescent-tomentose when young; leaves 3-foliolate; petioles 2--4 cm. long; leaflets to 8 cm. long and 4 cm. wide, crenate or entire along the margins, villous above, tomentose and glandulose beneath, finally more or less glabrescent, the central one obovate, cuneate at the base, borne on a short petiolule, the lateral ones obovate-elliptic and subsessile; inflorescence axillary, cymose, dense, few-flowered; bracts and bractlets broadly lanceolate, velutinous; flowers large, to 1.5 cm. long; calyx campanulate, about 6 mm. long, tomentose, deeply 5-parted, the teeth equal, to 2.5 mm. long, acute

at the apex; corolla short-tubular, glandulose outside, pilose and glandulose on the lobes, the lobes large, reflexed; filaments and style long-exserted; ovary lageniform, long-pilose at the apex.

The type of the species is Dabjiel 771, collected at Abinsi, Northern Nigeria. Pieper cites also Barter 1214 from Nupe, Northern Nigeria. It has been found at altitudes of 1600 meters in the Belgian Congo and was identified as "Leguminosae" by Quarré.

Citations: FRENCH WEST AFRICA: French Soudan: A. Chevalier 511 (Br). NORTHERN NIGERIA: C. Barter 1214 (T). BELGIAN CONGO: Quarré 5986 (Br).

VITEX PSEUDOCUSPIDATA Mildbr. in Von Mecklenb., Ergebn. Deutsch. Zentral-Afrik. Exped. 2: 62, hyponym. 1910-1911; Pieper in Fedde, Repert. 26: 163. 1929.

Literature: Mildbr. in Von Mecklenb., Ergebn. Deutsch. Zentral-Afrik. Exped. 2: 62. 1910-1911; Pieper in Engl., Bot. Jahrb. 62, Beibl. 141 ["142"]: 32, 58, & 84. 1928; Pieper in Fedde, Repert. 26: 163. 1929; Hill, Ind. Kew. Suppl. 8: 249. 1933; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 1], 48 & 104 (1942) and [ed. 2], 114 & 202. 1949.

Small tree; branchlets tetragonal, long-curved, sparsely fuscous-villous with light red-brown hair, especially when young; leaves 5-foliolate; petioles 8-10 cm. long, fuscous-villous with light red-brown hair; leaflets short-petiolulate, the blades obovate, 8-13 cm. long, 4-6 cm. wide, acuminate at the apex, entire, cuneate at the base, subglabrous and glandulose beneath or hirsute on the venation, sparsely pilose above; inflorescence axillary, large, to 20 cm. wide, loosely cymose; peduncles about 15 cm. long; bractlets linear, to 5 mm. long; flowers about 6 mm. long; calyx campanulate, slightly zygomorphic, 2-2.5 mm. long, glandulose and pilose-pubescent with light red-brown hairs, the rim distinctly 5-dentate, the teeth 1/5-1/4 the length of the calyx; corolla ochroleucous, the lower lip pale-violet, about 5 mm. long, glandulose and pilose-pubescent like the calyx; ovary globose, glabrous, more or less glandulose; fruiting-calyx and fruit not known.

The species is based on Mildbraed 4655 from Jukaduma, Molundu district, southern Cameroons, and is known only from the original collection.

VITEX PSEUDOLEA Rusby, Mem. New York Bot. Gard. 7: 341-342. 1927.

Literature: Rusby, Mem. New York Bot. Gard. 7: 341-342. 1927; Moldenke, Alph. List Common Names 1, 2, 29, 30, & 33. 1939; Moldenke, Geogr. Distrib. Avicenn. 28. 1939; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 1], 40 & 104. 1942; Moldenke, Phytologia 2: 121. 1944; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 2], 98 & 202. 1949.

Tree, to 15 m. tall, flowering before the leaves appear; branchlets medium-textured, rather heavy, obtusely tetragonal,

light-gray or white, minutely and obscurely puberulent on the youngest parts, soon glabrescent; twigs slender, obtusely tetragonal, brown or purplish in drying, densely cinereous- or sordid-puberulent, more sparsely so in age; nodes not noticeably annulate on older wood, rather obscurely annulate with a somewhat denser band of puberulence on young twigs; principal internodes 0.5--3 cm. long or even more abbreviated, mostly short; leaf-scars rather large, corky, and prominent; leaves decussate-opposite, 5-foliolate; petioles slender, 5.5--10 cm. long, rather densely short grayish-pubescent or -puberulent, convex beneath, conspicuously flattened above, not noticeably ampliate at the base nor disciform at the apex; leaflets subequal or unequal, the lowermost often much smaller, all petiolulate on petiolules that are slender, puberulent, canaliculate-margined, and 2--22 mm. long; leaflet-blades thin-chartaceous or membranous, rather uniformly bright-green on both surfaces (or brunnescent in drying when immature) or slightly lighter beneath, shiny above when mature, the central one elliptic-oblongate, 7--15 cm. long, 2.5--6.2 cm. wide, acuminate at the apex, entire, rather cuneately attenuate at the base, very minutely puberulent on both surfaces or glabrescent; midrib slender, slightly subimpressed above, prominent beneath; secondaries slender, 10--20 per side, close together, ascending, rather straight, rather obscurely arcuate-joined at the margins beneath, mostly flat above, prominent beneath; vein and veinlet reticulation abundant, fine and delicate, obscurely subprominent on both surfaces; inflorescence axillary, cymose, abundant, crowded on the young twigs, blooming before the leaves are expanded, 4--6 cm. long, 2.5--4 cm. wide, about 3 times dichotomous, widely spreading, with widely divaricate and loosely many-flowered branches, minutely but rather densely canescent-puberulent throughout; peduncles slender, 1.5--2.7 cm. long, violet-green when fresh, flattened, rather densely puberulent, often slightly ampliate and annulate with a band of denser puberulence at the apex; cyme-branches flattened, slightly ampliate and annulate at the apex like the peduncles; pedicels slender, 1--3 mm. long, canescent-puberulent; bracts apparently none; bractlets and prophylla linear, 1--3 mm. long, puberulent; calyx violet-green; corolla blue or lilac, the larger petal darker in color; stamens blue; filaments translucent; fruit red, almost black when mature, edible, about the size of and with the taste of an olive (*Olea europaea*).

The type of this species was collected by Orland Emile White (no. 767) at an altitude of 1000 feet at Rurrenabaque, La Paz, Bolivia, on October 4, 1921, and is deposited in the Britton Herbarium at the New York Botanical Garden. The species is very closely related to *V. cymosa* Bert. and may prove to be conspecific with it. It has been found in tropical forests from 200 to 465 meters altitude, in flower in September and in fruit in October and December. The bark is said to be medicinal and the fruit is eaten like cultivated olives. Recorded common names are "aceituno del monte", "anacahute", "anacahuita", "tarumá",

"torumar", and "wild olive".

Citations: PERU: San Martin: Ferreyra 4829 (W-1998618). BOL-IVIA: La Paz: New York Bot. Gard. Econom. Mus. 3974.2 (N); O. E. White 767 (K-isotype, N-type, W-1185815-isotype), 1079 (K, M1, N, W-1232301); R. S. Williams 523 (Bm, K, N). Santa Cruz: Peredo s.n. [Cobezas, Oct. 2, 1945] (N); Steinbach 2832 [Herb. Inst. Miguel Lillo 38004] (B, N, N, N), 6428 (B, Bm, Ca-368506, Cb, D-653030, E-943867, E-943868, Ed, F-565520, G, K, N, S, Ut).

VITEX PUBERULA J. G. Baker in Thiselt-Dyer, Fl. Trop. Afr. 5: 330. 1900.

Synonymy: Vitex doniana var.? pumila Hiern, Cat. Afr. Pl. Welw. 4: 837. 1900.

Literature: J. G. Baker in Thiselt.-Dyer, Fl. Trop. Afr. 5: 330. 1900; Hiern, Cat. Afr. Pl. Welw. 1 (4): 837. 1900; Pieper in Engl., Bot. Jahrb. 62, Beibl. 141 ["142"]: 43, 56, 82, & 84. 1928; Moldenke, Alph. List Invalid Names 53. 1942; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 1], 51 & 104 (1942) and [ed. 2], 119 & 202. 1949.

A tree; branchlets short-pubescent, the hairs drab; leaves 5-foliolate; petioles 5--7.5 cm. long; leaflet-blades coriaceous, obovate-cuneate, obtuse at the apex, distinctly petiolulate, green and glabrous above when mature, pubescent beneath, the central one about 7.5 cm. long and 3.5 cm. wide; inflorescence axillary, cymose, short-pedunculate, the branches finely pubescent; calyx campanulate, about 2 mm. long, pubescent, its rim dentate with distinct deltoid teeth; corolla small; fruit not known.

The type of this species was collected by Frederick Martin Josef Welwitsch (no. 5668) in the province of Pungo Andongo, Angola. Hiern and Pieper cite, in addition, Welwitsch 5747 from the same area.

VITEX PULCHRA Moldenke, Phytologia 3: 445-446. 1951.

Shrub; branchlets stout, medullose, densely flavescent-villose with antrorse hairs; principal internodes apparently abbreviated; leaves decussate-opposite, 6-foliolate; petioles stout, 7--13 cm. long, densely ferruginous-villosulous with subappressed antrorse hairs much shorter than those on the branchlets; petiolules rather stoutish, 0.5--2 cm. long, irregular in length, very densely ferruginous-villosulous with short antrorse hairs; leaflet-blades coriaceous, grayish-green above, ferruginous beneath, minutely scabridous above when mature, more or less densely pilose-pubescent when young, very densely ferruginous-pubescent beneath, narrow-elliptic or oblanceolate, the central one 8.5--15 cm. long and 2.5--4 cm. wide, the lower ones smaller, acute or very shortly acuminate at the apex, entire but usually conspicuously undulate-crested along the margins, varying from acute to obtuse or rounded at the base, sometimes asymmetric; midrib rather coarse, impress-

ed and usually ferruginous-pubescent above, very conspicuously rounded-prominent beneath; secondaries slender, 8-12 per side, more or less impressed above (at least on larger leaves), sharply prominent beneath, divaricate-ascending, irregularly arcuate-joined in many small loops near the margins beneath; veinlet reticulation abundant, varying from subprominulous above on smaller leaves to impressed on larger ones, sharply prominulous beneath; inflorescence axillary, sessile, very densely many-flowered and congested; peduncles obsolete; pedicels much abbreviated or obsolete, very densely flavescens-villous; bractlets elongate, linear, to 1 cm. long, glabrous and nigrescent on one surface, very densely flavescens-villous on the other surface; calyx campanulate, 7-8 mm. long, about 5 mm. wide at the apex, very densely fulvous-villous on the outside with long antrorsely subappressed hairs, the rim shortly 5-dentate, the teeth about 1 mm. long; corolla dark-red, tubular, about 2.5 cm. long, incurved, very densely long-villous on the outside with subappressed, long, sordid-silvery hairs, the lobes about 2 mm. long; stamens and pistil exerted about 1 cm. from the corolla-mouth.

The type of this handsome species was collected by Henri Perrier de la Bâthie (no. 10238) in a forest on hills at an altitude of 800 meters, Anoloïnoy, Madagascar, in January of 1932, and is deposited in the herbarium of the Muséum National d'Histoire Naturelle at Paris.

Citations: MADAGASCAR: d'Alleizette 1059m (N, P); Perrier de la Bâthie 10238 (N--photo of type, P--type, P--isotype, Z--photo of type).

VITEX PYRAMIDATA B. L. Robinson, Proc. Am. Acad. 29: 321. 1894.

Synonymy: *Vitex pyramidata* Robinson & Pringle apud Durand & Jacks., Ind. Kew. Suppl. 1: 457. 1906 [not *V. pyramidata* Millsp., 1907]. *Vitex pentaphylla* Pavon ex Moldenke, Prelim. Alph. List Invalid Names 52, in syn. 1940 [not *V. pentaphylla* Merr., 1909, nor Lamb., 1940]. *Vitex pentaphylla* Sessé & Moc. ex Moldenke, Prelim. Alph. List Invalid Names 52, in syn. 1940. *Vitex pyramidalis* Robinson ex Moldenke, Prelim. Alph. List Invalid Names 52, in syn. 1940. *Vitex trifoliata* Pav. ex Moldenke, Prelim. Alph. List Invalid Names 52, in syn. 1940 [not *V. trifoliata* Lam., 1947].

Literature: Robinson & Pringle, Gard. & Forest. 7: 153. April 18, 1894; B. L. Robinson, Proc. Am. Acad. 29: 321. 1894; Durand & Jacks., Ind. Kew. Suppl. 1: 457. 1906; Moldenke, Alph. List Common Names 15, 22, 26, & 30. 1939; Moldenke, Geogr. Distrib. Avicenn. 14. 1939; Moldenke, Carnegie Inst. Wash. Publ. 522: 208 & 210. 1940; Moldenke, Prelim. Alph. List Invalid Names 52. 1940; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 1], 19 & 104. 1942; H. S. Gentry, Carnegie Inst. Wash. Publ. 527 [Rio Mayo Pl.]: 42, 64, 66, 223, 224, & 306. 1942; Moldenke, Alph. List Invalid Names 54-55. 1942; Moldenke, Phytologia 2: 121. 1944; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 2], 34 & 202. 1949; F. Miranda, Veget. Chiapas 1: 99 (1952) and 2:

303 & 392. 1953.

Divaricately branched shrub or small bushy or round spreading tree, to 35 m. tall, densely and intricately branched; stems several; bark smooth, gray; branchlets rather stout, medullose, dichotomous, obtusely tetragonal, grayish-brown or buff, minutely puberulent, becoming glabrate in age; twigs slender or stoutish, acutely or obtusely tetragonal, often slightly sulcate, medullose, usually densely puberulent with sordid-gray hairs; nodes annulate; principal internodes 1--3.5 cm. long; leaf-scars rather large, usually not very corky nor prominent (except sometimes the edges); leaves decussate-opposite, 5-foliolate (rarely 3-foliolate); petioles slender or stout, 4.5--10 cm. long, convex beneath, conspicuously flattened above, often submargined, usually not noticeably ampliate at the base, disciform at the apex, puberulent throughout with minute and rather sparse grayish or sordid hairs; leaflets usually unequal in size, the 2 lowermost decidedly smaller than the 3 central ones, all rather long-petiolate on slender or stoutish, puberulent, distinctly canaliculate and margined petiolules 2--22 mm. long, all the petiolules normally equal in length or the 2 lowermost somewhat shorter; leaflet-blades thin-chartaceous or submembranous during anthesis, subcoriaceous or coriaceous in age, bright- or grayish-green above (usually brunnescent or very dark in drying when immature), much lighter or sordid-gray beneath, the central one oblong or elliptic, varying to ovate, 3.5--18 cm. long, 1.7--6.7 cm. wide, rather abruptly acute or rounded at the apex, entire, obtuse to broadly rounded or even subcordate at the base, sparsely pulverulent-puberulent above (more densely so on the midrib and secondaries), becoming subglabrate except for the midrib and secondaries, densely short-pubescent and resinous-granular beneath with cinereous or sordid pubescence, varying to densely and minutely grayish-tomentulose, the lateral ones similar in all respects, but usually smaller; midrib slender, impressed above (especially on mature leaves), prominent beneath; secondaries slender, 7--12 per side, impressed above (especially on mature leaves), very prominent beneath, ascending, usually rather straight, not much arcuate except near the margins where they are arcuately joined; vein and veinlet reticulation fine and abundant, impressed above (especially on mature leaves), prominulous beneath; inflorescence axillary, thyrsoid-paniculate, abundant, often paired in the uppermost axils, 10--26 cm. long, 3--16 cm. wide, mostly composed of 1--4 pairs of lateral long-stalked panicles and a terminal one, each panicle composed of 3--9 rather long-stipitate and many-flowered cymes, densely puberulent throughout; peduncles slender or rather stout, 4--13 cm. long, tetragonal or flattened, puberulent; inflorescence-branches and rachis resembling the peduncles in all respects, but more slender; pedicels very slender, 1--2 mm. long, densely puberulent; bracts often present, large and foliaceous, 3--5-foliolate, long-stipitate, resembling the leaves in color and pubescence; bractlets linear, oblong, lanceolate, or spatulate, 2--4 mm. long, puberulent, sessile; prophylla linear, about 1

mm. long, puberulent; flowers very fragrant; corolla varying from blue or bright-blue to lavender, with a white throat, slightly bilabiate, pilose in the throat; fruit fleshy, black, about 1 cm. in diameter, edible.

The species is based on Pringle 4429, collected on rocky hillsides about Tequila, Jalisco, Mexico, on June 29, 1893, and on Edward Palmer 422, also collected at Tequila in August of 1886. The species inhabits rocky and sunny hillsides, arroyos, volcanic mountains, the edge of craters, rocky outcroppings and basaltic mesas in short-tree and oak forests, prairies, rather rocky dry spots in low spiny matorral, and rocky ground in general. It has been found among rocks on ridges, sometimes clinging to the arid rocks on sunny open slopes. It is said to be a characteristic plant of the mesas (oak forests) and of the foothills and lower oaks, common on dry rocky slopes with lower oaks and on arid slopes with low scattered trees. It ascends from 350 to 1530 meters altitude, and has been collected in anthesis in February, April, and June to September, and in fruit in June and from August to October. Hinton reports that when burned, the ash is blue. The fruit is edible, under the name of "ahuilote".

The species has been misidentified in herbaria as V. hemsleyi Briq. and V. mollis H.B.K. Millspaugh identified Gaumer 607 as V. pyramidata, but this collection actually is V. gaumeri Greenm. Common names are "hupari", "negrito", "negrito coyote", "querenda", "querendereniqua", "tescalama", "uvalama", "uvulama", and "yashcabté". The name "negrito" is also applied to Citharexylum berlandieri B. L. Robinson and "uvalama" to V. mollis H.B.K. Vitex pentaphylla Lamb. is a synonym of V. peduncularis Wall., V. pentaphylla Merr. is V. glabrata R. Br., V. pyramidata Millsp. is V. gaumeri Greenm., and V. trifoliata Lam. is V. trifolia L. The Gonzalez Ortega 577, cited below, may perhaps have been collected in Nayarit.

Shreve 6089 has several 3-foliolate leaves, but I believe that the two lowermost leaflets have actually dropped off -- there are two plainly 5-foliolate leaves still remaining on the specimen; the same statement applies to Liebmann 11347 in the United States National Herbarium. On Herb. Pavon s.n. in the Herbarium Boissier all the leaves are 3-foliolate, but several plainly show the remains of more petiolules; Leavenworth & Hoogstraal 1707 also shows only 3-foliolate leaves as mounted. In general, however, the usually heavy leaflets, 5 in number, with deeply impressed venation above and prominent venation beneath, characterize this species quite well. Gentry reports that the flowers are visited by several species of wild bees in large numbers. The fruit is reported by him to be saleable in Sonora at \$13 a fanega, marketed in Alamos and Navojoa, and is eaten like that of V. mollis. It is said to form an important contribution to the limited diet of the natives. He also states that all the indigenous people rely on this and other native woods for fuel and construction purposes.

Miranda says "arbol hasta de 35 m. de alto con la corteza gris poco rugosa; hojas....menudamente gris afelpadas debajo... Abundante en silvas altas subdeciduas al Este de Ocosingo. Los frutos son comestibles. La madera es similar a la de Vitex Gaumeri de Yucatán, la cual es de color gris claro, de textura fina, de grano irregular o entrecruzado, con peso de unos 16 kilos por pie cúbico o 560 por metro cúbico; moderadamente dura y fuerte, facie de trabajar, toma buen pulimento y es regularmente durable. Se ha usado para carretas y yugos; a causa de que no raja facilmente se ha recomendado para catres de campaña, bastones de polo y de golf, mangos de cinceles, y posiblemente se pueda emplear para vehiculos e instrumentos agrícolas."

Citations: MEXICO: Durango: J. N. Rose 3481 (W--302458), 3487 (W--302464). Guerrero: R. Q. Abbott 141 (N); Hinton 5999 (F--938080, K, N, N), 6956 (K, N), 9990 (K, Ld, N), 10002 (F--938081, K, N), 10005 (F--938058, Fs, K, N, N), 11244 (N, N). Jalisco: Edw. Palmer 129, in part (Vu), 422 (B--cotype, Bm--cotype, C--cotype, E--116173--cotype, F--236893--cotype, G--cotype, K--cotype, Mi--cotype, N--photo of cotype, N--photo of cotype, Os--cotype, P--cotype, Pa--cotype, Us--cotype, W--58244--cotype, X--cotype, Z--photo of cotype, Z--photo of cotype); Pringle 4429 (B--cotype, Bm--cotype, Bm--cotype, Br--cotype, C--cotype, C--cotype, Ca--104856--cotype, Cb--cotype, Cb--cotype, D--cotype, E--116183--cotype, Ed--cotype, F--264319--cotype, G--cotype, J--cotype, K--cotype, Me--cotype, Me--cotype, Me--cotype, Mu--1811--cotype, Ob--50881--cotype, P--cotype, S--cotype, V--cotype, Vt--cotype, Vu--cotype, W--46916--cotype, W--1323357--cotype, X--cotype); B. P. Reko 4435 (Me, W--1268947); Rose & Hough 4754 (W--346745). México: Hinton 720 (K, Me), 740 (K), 3829 (K, N), 4086 (K, K, N, N); Matuda 27914 (Z), 27972 (Cb), 27974 (Cb); Matuda & al. 31387 (Se). Michoacán: Leavenworth & Hoogstraal 1707 (Ur). Nayarit: J. Gonzalez Ortega 107 (Me), 451 (Me); J. N. Rose 1485 (F--600841, G, K, K, N, W--300322, W--300323), 3304 (W--302280). Sinaloa: T. S. Brandegee s.n. [Oct. 1904] (Ca--169231, W--873713); H. S. Gentry 5073 (Ak--20404, Du--277961, N); J. Gonzalez Ortega 577 (K), 4028 (W--1169117); M. E. Jones 23498 (N); Mexia 397 (Gg--142024); Nervaez Montes & Salazar 577 (W--1035408); Thejo 1096 (W--1035683). Sonora: H. S. Gentry 2256 (Ca--582116, F--861636, Fs, Ge, Me, S), 2952 (Ca--582089, F--862364, Fs, Ge, S); Herb. Inst. Biol. Univ. Nac. Mex. 4909 (Me); Rose, Standley, & Russell 12884 (N, W--635701); Shreve 6089, in part (F--682950). Yucatán: Gaumer & sons 607 (Du--206175). State undetermined: Beechey s.n. (K); Collector undesignated 1052 (Me), s.n. (P, P); Ehrenberg 248 [Chanzingo] (B); Haenke 961 (F--834789), 1524 (N); Herb. Pavon s.n. [Nueva España] (X, X); Liebmann 11347 (Cp, N, W--1315102); Edw. Palmer 1599 [Lodiogo] (Cp, F--222585, G, N, W--305437); Schnée s.n. (P); Sessé, Moçiffo, Castillo, & Maldonado 2186 (F--847135, Q).

VITEX QUINATA (Lour.) F. N. Will., Bull. Herb. Boiss., sér. 2, 5: 431. 1905.

Synonymy: Cornutia quinata Lour., Fl. Cochinch., ed. 1, 387. 1790. Vitex heterophylla Roxb., Hort. Beng. 46, hyponym. 1814; Fl. Ind., ed. 2, 3: 75. 1832 [not V. heterophylla Blume, 1858, nor Schau., 1919]. Vitex babula Buch.-Ham. ex Wall., Numer. List [48], no. 1745, hyponym. 1829. Vitex undulata Wall., Numer. List [48], no. 1756, hyponym. 1829. Vitex loureiri Hook. & Arn., Bot. Beech. Voy. 206, pl. 48. 1836 [not V. loureiri Wight, 1942]. Vitex loureirii Hook. & Arn. ex Schau. in A. DC., Prodr. 11: 686. 1847 [not V. loureirii Wight, 1885]. Vitex heterophylla var. undulata (Wall.) C. B. Clarke in Hook. f., Fl. Brit. Ind. 4: 585. 1885. Vitex quinata (Lour.) Druce, Rep. Bot. Exch. Club Brit. Isles 1916: 652. 1917 [not V. quinata Schumacher, 1940]. Vitex quinata Williams ex Lévl., Cat. Pl. Yun-Nan 278. 1917. Vitex heterophylla var. typica H. J. Lam, Verbenac. Malay. Arch. 188. 1919. Vitex negundo Lour. ex Crevost & Pételot, Bull. Econom. Indo-chine 37: 1294, in syn. 1934 [not V. negundo L., 1753, nor Willd., 1918]. Vitex heterophyllum Roxb. ex Biswas, Indian Forest Rec. Bot., new ser., 3: 42. 1941. Vitex heterophyllum var. undulata Clarke ex Biswas, Indian Forest Rec. Bot., new ser., 3: 42. 1941. Vitex quinata (Lour.) F. N. Will. ex Moldenke, Alph. List Invalid Names 55, in syn. 1942. Vitex quinaria Will. ex Moldenke, Alph. List Invalid Names Suppl. 1: 29, in syn. 1947. Vitex heterophylla Williams ex Moldenke, Alph. List Invalid Names Suppl. 1: 28, in syn. 1947. Vitex heterophylla var. genuina Lam, in herb. Vitex quinata (Lour.) Merr., in herb.

Literature: Lour., Fl. Cochinch., ed. 1, 387. 1790; Roxb., Hort. Beng. 46. 1814; Wall., Numer. List [48], nos. 1745 & 1756. 1829; Roxb., Fl. Ind., ed. 2, 3: 75. 1832; Wall., Pl. Asiat. Rar. 3: pl. 226. 1832; Hook. & Arn., Bot. Beech. Voy. 206 (1836), pl. 48. 1841; Moritz, Syst. Verz. 53. 1845—1846; Schau. in A. DC., Prodr. 11: 686. 1847; Miq., Fl. Ind. Bat. 2: 862—863. 1858; Miq., Fl. Ind. Bat. Suppl. 1: 242 & 567. 1860; Vidal, Sin. Fam. & Gen. Pl. Leff. Filip. (Introd. Fl. For. Filip.) Atlas pl. 75, fig. B. 1883; C. B. Clarke in Hook. f., Fl. Brit. Ind. 4: 585. 1885; Forbes & Hemsl., Ind. Fl. Sin. 2: 257. 1890; Koord., Meded. Lands Plant-tuin Buitenz. 19: 560 & 645. 1898; Koord. & Val., Bijdr. Booms. Java 7: 204. 1900; F. N. Will., Bull. Herb. Boiss., sér. 2, 5: 431. 1905; King & Gamble, Journ. As. Soc. Beng. 74: 848. 1909; Koord., Exkursi-  
onsfl. Java 3: 137. 1912; Koord. & Val., Atlas Baumart. Java 2: 6, pl. 296. 1914; Druce, Rep. Bot. Exch. Club Brit. Isles 1916: 652. 1917; Heyne, Nutt. Plant. Nederl. Ind., ed. 1, 4: 111 & 113. 1917; Kanehira, Formosan Trees 407. 1917; Lévl., Cat. Pl. Yun-Nan 278. 1917; H. Hallier, Meded. Rijks Herb. Leid. 37: 45. 1918; Van Gorkom, Oost-Ind. Cult., ed. 2, 3: 879. 1919; H. J. Lam, Verbenac. Malay. Arch. 167, 187—189, & 370. 1919; E. H. Wilson, Arn. Arb. Exped. E. Asia 1917—18, pl. N—

452. 1920; Bakh. & Lam, Bull. Jard. Bot. Buitenz., ser. 3, 4 (2): 285. 1922; H. J. Lam, Bull. Jard. Bot. Buitenz., ser. 3, 5 (2): 177-178. 1922; Heyne, Nutt. Plant. Nederl. Ind., ed. 2, 1315 & 1317. 1925; E. H. Walker, Fifty-one Common Ornam. Trees Lingnan Univ. Canton [Lingnan Sci. Journ. 6:] 146. 1930; Stapf, Ind. Lond. 6: 478. 1931; Crevost & Pételot, Bull. Econom. Indo-chine 37: 1294. 1934; Moldenke, Alph. List Common Names 14, 17, 19-21, & 31. 1939; Moldenke, Geogr. Distrib. Avicenn. 40. 1939; Moldenke, Prelim. Alph. List Invalid Names 24 & 50-52. 1940; Moldenke, Suppl. List Common Names 2-4, 7-14, 18, 19, 22, & 24. 1940; Biswas, Indian Forest Rec. Bot., new ser., 3: 42. 1941; Worsdell, Ind. Lond. Suppl. 2: 500. 1941; Moldenke in A. C. Sm., Sargentia 1: 115. 1942; Moldenke, Alph. List Invalid Names 22 & 52-55. 1942; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 1], 55-61, 63-67, 69, 75, 80, & 104. 1942; Moldenke, Phytologia 2: 122. 1944; Moldenke, Alph. List Invalid Names Suppl. 1: 28 & 29. 1947; H. N. & A. L. Moldenke, Plant Life 2: 70. 1948; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 2], 128, 129, 133, 135, 137-139, 142, 143, 145-148, 151, 166, & 202. 1949; H. N. & A. L. Moldenke, Anal. Inst. Biol. Mex. 20: 15. 1949.

Illustrations: Wall., Pl. Asiat. Rar. 3: pl. 226 (colored). 1832; Hook. & Arn., Bot. Beech. Voy. pl. 48. 1836; Vidal, Sin. Fam. & Gen. Pl. Left. Filip. (Introd. Fl. For. Filip.) Atlas pl. 75, fig. B. 1883; Koord. & Val., Atlas Baumart. Java pl. 296. 1914; Kanehira, Formosan Trees 407. 1917; Van Gorkem, Oost-Ind. Cult., ed. 2, 3: 879. 1919; E. H. Wilson, Arn. Arb. Exped. E. Asia 1917-18, pl. N-452. 1920; E. H. Walker, Fifty-one Common Ornam. Trees Lingnan Univ. Canton [Lingnan Sci. Journ. 6:] 146. 1930; Crevost & Pételot, Bull. Econom. Indo-chine 37: 1294. 1934.

Shrub or tree, to 45 m. tall, erect or spreading, handsome; trunk cylindrical, to 100 [or 200?] cm. in diameter, often 40-60 cm. in diameter at 15-20 m. up the trunk; bark gray or grayish-brown, finely longitudinally fissured; branches gray-brown, 4-angular, "gray-tomentose"; branchlets and twigs slender, acutely tetragonal, gray or brown to purplish, rather medullose, the youngest parts pulverulent-puberulent, soon becoming glabrate; nodes obscurely or not at all annulate; principal internodes 1.5-5 cm. long; leaves decussate-opposite, 3-5-foliolate; petioles very slender, convex beneath, usually deeply canaliculate above, sparsely and rather obscurely strigillose-pulverulent, becoming glabrous, not ampliate at the base nor disciform at the apex; leaflets usually unequal in size, the central 1 or 3 the largest, the 2 lowermost usually conspicuously reduced, all petiolulate on margined and canaliculate petiolules 1-14 mm. long, the central one usually long-stalked and the lateral ones with much shorter petiolules; leaflet-blades thin-chartaceous, uniformly dark-green on both surfaces or somewhat lighter beneath, sometimes glossy-green above, mostly shiny on both surfaces, the central one oblong-elliptic or oblanceolate to subobovate, 4.5-10 cm. long, 1.7-4 cm. wide, rather long-acuminate or caudate at the apex (the acumination acute or

bluntish), entire, acute or acuminate at the base, glabrate but abundantly grayish-punctate above, finely pulverulent-puberulent or glabrate beneath and more or less resinous-gramulose, the lateral ones similar but smaller and usually more acute and less petiolulate; midrib slender, flat or subprominent above, prominent beneath; secondaries slender, 4-12 per side, arcuate-ascending, usually slightly prominent above, more conspicuously prominent beneath, arcuately joined near the margins; veins and veinlet reticulation abundant, the larger portions subprominent on both surfaces; inflorescence terminal (and axillary in the uppermost leaf-axils), paniculate, 6-20 cm. long, about 4 cm. wide, composed of several to many ascending or divergent branches, each composed of many opposite or subopposite pairs of rather few-flowered cymes, densely canescent-puberulent throughout; peduncles 1-3.5 cm. long, mostly acutely tetragonal, often sulcate, more or less densely puberulent; rachis similar to the peduncle in all respects; sympodia usually short; pedicels slender, about 1 mm. long, canescent-puberulent; bracts (when present) few, foliaceous, 3-foliolate, similar to the leaves but smaller in all parts; bractlets and prophylla linear, 1-3 mm. long, puberulent; torus green; calyx green; flowers fragrant; corolla described as blue, light-blue, purple, violet, or "pink and white", varying to whitish, white, "white-purplish", yellowish-green, or yellow, or even "white and yellow", the lower lip violet; stamens 4; filaments whitish-pink; anthers black; pistil whitish-green; fruit green or yellow when immature, purplish-black or black and lustrous when mature, drupaceous.

The tree is said to be fairly common in thickets on dry land in the loam of village commons on Hainan Island or "rare" in thickets on moist gentle slopes in silt-sand of streams. It is found in woods, in forested ravines, rocky thickets, and along streams. It is said to occur scattered in moist loam along roadsides, in the partial shade of light or thin woods, in mixed woods, at the edges of clearings and cleared ravines, on hill-tops, and on dry land of wooded hillsides. It is abundant in silt of swamps. On Celebes and other Pacific islands it occurs in primary forests and rainforests and on sea beaches. In Annam it is said to be found in damp forests and commonly in open places along rivers. It ascends from sea level to 1400 meters altitude, and has been collected in anthesis in February and from May to September, in fruit from June to February. A bark specimen can be seen on Ying 2803 in the Britton Herbarium.

Common names recorded for the species are "arnrai", "basal", "boengis", "chân chim", "flowery lëban", "gofasa", "hamuladin", "horn lëban", "kajoe-gopasa", "kajoe sëmoe", "kalipápa-asu", "kalipápa-madam", "ka liu tsoi", "ka liu tzo", "kamalan", "këtilëng", "ki bangbara", "koefo-koefo", "koetilëng", "kojoe sëmoe", "laban", "laban këtilëng", "laban loening", "laban sëmoe", "lëban boenga", "lëban bunga", "lëban tandok", "limo-limo", "limpápa", "lifigo-lifigo", "magúpai", "mamali", "man kinh", "masarawet", "masarawet sëla", "masarawet-sela", "masarawët", "mbo", "mbothawa", "mëdang giring", "moláve-aso,

"ndrai tolu", "ngu gia bi", "niu", "rimoewas", "sai tsio tau", "saivonta", "saoe", "saoe masarawêt", "saoe-masarawet", "saoe poeti", "saoe-poeti", "saoe rëndai", "saoe-rendai", "saoe sèla", "saoe-sela", "shan po king shue", "shek wong king" [=stone-yellow-deer], "tail wong muk" [=big-king-tree], "tileng", "tilëng", "tugas", "woelas watoe", "yarokasawa", and "ye po keng". Some of these vernacular names, however, are applied to other species as well; for instance, "lifgo-lifgo" and "kalipápa-madam" are applied also to Premna adenosticta Schau., "gofasa" to Vitex cofassus Reinw., "laban" and "lëban boenga" to V. pinnata L., "horn lëban" and "lëban tandok" to V. pinnata and V. vestita Wall., "kamalan" to Viticipremna philippinensis (Turcz.) H. J. Lam, "tugas" to Vitex parviflora A. L. Juss. and Viticipremna philippinensis, "tilëng" to Vitex glabrata R. Br., "këtilëng" to V. glabrata and V. velutina (Koord. & Val.) Koord., "laban këtilëng" to V. glabrata and V. pinnata, and "flowery lëban" and "lëban bunga" to V. longisepala King & Gamble, V. pinnata, and V. vestita.

I am not at all convinced that all of the specimens cited below are conspecific. For instance, the Dolleschal collection has all its leaves simple and reminds one of V. cofassus. The Clemens 10021, 10047, 10150, 10274, and Moulton 6718 all have 3 leaflets and look much like Teijsmanniodendron coriaceum (C. B. Clarke) Kosterm. Moulton states that the color of the flowers on his specimen was Saccardo 26. The following collections have their leaflets 3 in number and small in size: Ching 7309, Chun 7745, Chun & Tso 43954 & 44673, Fung 20420, How 71073, How & Chun 70248, Lau 20143, Lei 66, Steward & Cheo 807 and 1157, Tsang 21194 and 21477, Tsiang 2611, Wang 33752 and 34267, and Ying 770. Chun 7456 has 3--5 small leaflets, while McClure 8041 has 5 small leaflets. The Mallonga s.n. collection has 3 to 5 large leaflets, while Ham. R.5 and To & Ts'ang s.n. have 5 large leaflets. The Forbes 3784 collection from Timor is sterile and badly eaten by insects; it may not be this species. The M. Ramos 1869 from British North Borneo was identified by Merrill as "a variety with large fruit" -- it has five leaflets and the fruit is yellow.

The V. quinata Schumacher is a synonym of V. negundo L., V. heterophylla Blume is V. pinnata L., while V. heterophylla Schau., V. loureiri Wight, V. loureirii Hook., and V. loureirii Wight are all synonyms of V. urceolata C. B. Clarke.

The punctate leaflet-blades serve well, in general, to distinguish V. quinata from related species. The secondaries are rather few in number, distant, and conspicuously arcuate in this species, while in the closely related V. pierreana Dop they are numerous, close together, almost straight, and parallel. Judd describes the fruit as "berries", but they are actually drupes. The variation in flower-color as noted by col-

lectors is most amazing and may well be due to faulty observation or description. Specimens of *V. quinata* have been misidentified in herbaria as *V. pentaphylla* Merr., *V. negundo* L., *V. sumatrana* var. *urceolata* King & Gamble, and even *Ardisia* sp. The wood is said to be used for making pillars. Heyne says "Het hout wordt in West-Java duurzaam genoemd en voor huisbouw geschikt geacht, maar zelden gebruikt, omdat de stam meestal te diep ge- gleuofd is."

In *Sargentia* 1: 115 (1942) I cited *Degener* 14481 as *V. quinata*, but actually this collection represents var. *puberula*. Dr. Lam gives "1827" as the date for Wall., Numer. List [48], no. 1745, but, according to the late Dr. J. H. Barnhart, this page did not appear until 1829.

Citations: INDIA: Assam: *Chatterjee* s.n. (Br). BURMA: Tenasserim: *Helfer* 6068 (Cp, S, V). CHINA: Chekiang: *Ching* 1987 (Ba). Fukien: *H. H. Chung* 5085 (N); *Ging* 5332 (Gg--154216), 6759 (Gg--154133), 7168 (Mi). Kwangsi: *R. C. Ching* 7309 (N); *Steward & Cheo* 807 (Bz--25130, N, S), 1157 (N, S). Kwangtung: *N. K. Chun* 7745 (Bz--25132, N); *Lau* 20143 (N); *Levine* 10 (Io); *To & Ts'ang* s.n. [Herb. Lingnan Univ. 12613] (La, N); *W. T. Tsang* 16443 (N), 21194 (N, N, S), 21477 (N, N, S); *Tsiang* 2611 (N); *Y. K. Wang* 2803 (N); *Ying* 770 (Bz--25133), 1066 (Du--250174), 2803 (N). Province undetermined: *Dunn* s.n. (Cp, Cp, N). HONAM ISLAND: *Levine* s.n. [Herb. Canton Chr. Coll. 1206] (Ka--62908); *E. D. Merrill* 9996 (Gg--31497); *Ping* 1849 [Herb. Canton Chr. Coll. 13674] (Bz--25131). HONGKONG: *W. Y. Chun* 4981 (Du--200919), 7456 (N); *C. Ford* s.n. [Little Hong Kong] (N). HAINAN ISLAND: *Chun & Tso* 43954 (Go, N, S), 44673 (N); *Fung* 20420 (Bz--25134, N); *Gressitt* 1053 (Gg--316092, I); *F. C. How* 70570 (Go), 70858 (Go), 71073 (N); *How & Chun* 70248 (N); *S. K. Lau* 16 (I, Mi), 153, in part (I, Mi); *Lei* 66 (Ba, Bz--25128, N), 714, in part (Ba, N); *Liang* 62069 (N), 62220 (Go), 62780, in part (Go), 63161 (N), 64495 (N, S), 66530 (N); *F. A. McClure* 8041 [Herb. Canton Chr. Coll. 8041] (Gg--127989, N); *W. T. Tsang* 178, in part [Herb. Lingnan Univ. 15677] (N), 223, in part [Herb. Lingnan Univ. 15722] (N, N), 786 [Herb. Lingnan Univ. 18230] (N), 868 [Herb. Lingnan Univ. 16367] (N), 944 [Herb. Lingnan Univ. 16443] (N); *C. Wang* 32890 (N), 32892 (Go), 33280 (N), 33752, in part (N), 34267, in part (N). INDOCHINA: Annam: *Clemens & Clemens* 3394 (Gg--156436, Mi); *Poillane* 11074 (S). MALAYA: Malacca: *W. Griffith* s.n. [Malacca] (Br). PHILIPPINE ISLANDS: Batan: *M. Ramos* s.n. [Herb. Philip. Bur. Sci. 80710] (Bz--24510). Mindanao: *W. I. Hutchinson* s.n. [Herb. Philip. Forest Bur. 11245] (N); *Mallonga* s.n. [Herb. Philip. Forest Bur. 26007] (Bz--23822); *Wenzel* 2523 (Au, Br, Bz--25091, N), 2563 (Bz--23821), 2912 (Au, Br, Bz--25092), 3430 (Bz--23820).

Palawan: E. D. Merrill 9330 (Cm). SUMATRA: Buwalda 368 [Boschproefst. BB.28591]. JAVA: Koorders 9840b, in part (Bz--24202). BRITISH NORTH BORNEO: M. K. Clemens 10021 (Ph), 10047 (Ph), 10150 (Ph), 10274 (Ph); M. Ramos 1869 [field no. 800] (Ph). BORNEO: Moulton 6718 (Ph). MOENA ISLAND: Ham R.5 (Bz--23863). LESSER SUNDA ISLANDS: Timor: Forbes 3784 (Bz--23814). MOLUCCA ISLANDS: Amboina: Dolleschal 120 (V). CULTIVATED: China: Chung 2517 (K). Florida: Collector undesignated s.n. (Fl--21145). Hawaiian Islands: A. F. Judd s.n. [Bishop Estate Nursery, Dec. 1, 1930] (Ba). India: Wallich 1745 (K, K, N). MOUNTED ILLUSTRATIONS: Icon. Select. Hort. Thenen. pl. 199 (Br).

VITEX QUINATA var. PUBERULA (H. J. Lam) Moldenke, *Phytologia* 3: 489. 1951.

Synonymy: Vitex celebica Koord., Meded. Lands Plant-tuin Buitenz. 19: 560 & 645. 1898. Vitex heterophylla var. puberula (Miq.) H. J. Lam, *Verbenac. Malay. Arch.* 189. 1919. Vitex heterophylla var. puberula H. J. Lam ex Moldenke, *Phytologia* 3: 489, in syn. 1951.

Literature: Miq., *Fl. Ind. Bat.* 2: 862--863. 1858; Koord., *Meded. Lands Plant-tuin Buitenz.* 19: 560 & 645. 1898; H. J. Lam, *Verbenac. Malay. Arch.* 189. 1919; Bakh. & Lam, *Bull. Jard. Bot. Buitenz.*, ser. 3, 4 (2): 285. 1922; H. J. Lam, *Bull. Jard. Bot. Buitenz.*, ser. 3, 5 (2): 177. 1922; Moldenke in A. C. Sm., *Sargentia* 1: 115. 1942; Moldenke, *Phytologia* 3: 489. 1951.

This variety differs from the typical form of the species in having its branchlets softly pubescent, the leaves in general larger, and the leaflets more or less minutely pilose or pubescent on or along the midrib beneath. The petioles are 5--21 cm. long; the leaflets are 3--5 in number, the central one 9--18.5 cm. long and 3.5--9 cm. wide, on petiolules 8--25 mm. long, and the lateral ones 7--14 cm. long and 2.8--7 cm. wide, on petiolules 2--15 mm. long.

It is described as a shrub or else a small or large tree, 3--28 m. tall, the trunk erect, to 150 cm. in diameter at breast height, often to 14 m. tall, with a circumference of 310 cm. at a height of 1 m. from the ground, the crown often 14 m. tall; bark brown, gray, or brownish-gray, fibrous, cracked longitudinally in streaks all along the trunk, yellowish when cut; wood whitish; branches brown-gray; leaves often subglabrous, with just a few minute hairs along the sides of the midrib beneath, deep-green and glossy above, pale-green beneath; flowers fragrant, abundant; flower-buds green and pink-tinged; corollas varying from purple or pale-purple to white-purple or white, sometimes white with a purple tinge in the throat or whitish with the upper lip violet; fruit green or bluish-green when immature, black when mature, bluntly elliptic, about 2 cm. long and 1 cm. wide, fleshy, sweet, edible.

The variety was based by Lam on Korthals s.n. (Le--908267-448) from Sumatra, on Horsfield s.n. (Ut--49904) and Buijsman

250 from Mt. Tengger, Java, and on DeVriese & Teijsmann 28 and 50 from Celebes. It is, however, not a very well-marked variety and some of the specimens cited as typical V. quinata may better be placed here, and vice versa. Lam accredits the varietal name to Miquel, but I cannot find that Miquel ever proposed a varietal epithet for it. In his Flora, cited above, he merely refers to the plant as "Vitex heterophylla Roxb. var.  $\beta$  foliolis quinis subtus in nervis puberis, extimis valde depauperatis" and cites a Horsfield collection from Samarang en Patjitan, Java.

Koorders based his V. celebica on Koorders 19543b, 19544b, 19545b, 19546b, 19548b, 19549b, 19550b, 19551b, 19552b, 19554b, 19556b, 19558b, 19559b, and 19560b, and all of these were originally identified as V. minahassae Koord. by Koorders and Valetton. Koorders states that his V. celebica has the flowers and leaves rather densely glandulose beneath and thus differs from V. minahassae [which latter name actually belongs in the synonymy of V. glabrata R. Br.].

The variety has been found in forests and dense forests, rainforests, coastal thickets, lakesides, in evergreen jungles or at the edges of evergreen jungles on foothills, mixed forests, primary forests on coral islands, edges of forests, in woods along streams, in wooded ravines, and in open places. It is said to be rare in sandy soil on dry cliffs and rare or scattered in sandy soil on moist gentle slopes, at altitudes of 15 to 900 meters. It has been collected in anthesis in February, May, June, and August to December, and in fruit in February, March, June, August, September, and October. Specimens in herbaria have been misidentified as V. glabrata R. Br., V. heterophylla Roxb., V. heterophylla var. undulata C. B. Clarke, V. heterophylla var. gemina H. J. Lam, V. littoralis Decne., V. minahassae Koord., V. negundo L., V. parviflora A. L. Juss., V. pubescens Vahl, V. pubescens var. Miq., and V. urceolata C. B. Clarke. Degener 11481 was erroneously cited by me in Sargentia 1: 115 (1942) as the typical form of the species. Koorders 9846b consists of seedlings with the leaflets coarsely serrate-dentate.

Common names for the variety include "bahoe", "bo", "gofasa", "kalimpapa", "kesileng", "ketileng", "khai nao", "kuruhu", "labansimoet", "mamali", "marambia", "mbo", "mbosawa", "mbothawa", "mote", "nahadori", "ndrai tolu", "papakélan tso", "ridohokko", "sai tsio tau", "sao", "saraúwet", "sarawet", "seember", "semoet", "sohaot", "sowgatmoeroe", "ta phun thao", "tileng", "toelawoto bintalaha", "tomboera matoetoe", "tompira", "tonde", and "yarokasawa".

As an indication of the difficulty botanists have had in identifying material of this plant, consider that the Collector undesignated 5592 collection cited below was identified in sequence as V. littoralis, V. heterophylla, V. pubescens, and V. celebica, and the Herb. Hort. Bot. Bogor. s.n. collection was

identified in sequence as V. parviflora, V. pubescens, V. quinata, and V. heterophylla var. undulata.

Citations: CHINA: Kwangsi: Ching 5552 (N). Kwangtung: Herb. Canton Chr. Coll. 12613 (S). Yunnan: A. Henry 1182, in part (N). FORMOSA: A. Henry 1182, in part (N), 1182a (N). HAINAN ISLAND: Lau 153, in part (N), 1908 (N), 1931 (N); Lei 714, in part (Bz--25129); Liang 62780, in part (N); Tsang 178, in part [Herb. Lingnan Univ. 15677] (S), 223, in part [Herb. Lingnan Univ. 15722] (S); C. Wang 33752, in part (S), 34267, in part (S). INDOCHINA: Annam: Clemens & Clemens 3480 (N). Tonkin: Bon 6202 (S); Pételot 963 (N, N), 977 (N), 1081 (N), 6176 (N, N). THAILAND: Bunnak 458 [Herb. Roy. Forest Dept. 12212] (Ss). PHILIPPINE ISLANDS: Leyte: F. Franco s.n. [Herb. Philip. Forest Bur. 26874] (Bz--23823). Luzon: E. D. Merrill 2839 (N). Masbate: W. W. Clark s.n. [Herb. Philip. Forest Bur. 2526] (Bz--24509). CAROLINE ISLANDS: Pelew Islands: Kanehira 2022 (N). SUMATRA: Atjeh 82 [Koorders 10597b] (Bz--25125, Bz--25126), 83 [Koorders 10596b] (Bz--25123, Bz--25124); Barends B.W.6a [Boschproefst. BB.8483] (Bz--25122); Buwalda 701 [Boschproefst. BB.30109] (Bz--25119); Gusdorf 91 (Bz--25111); Lambach 1221 (Bz--25112, Bz--25113, Bz--25706); Teijsmann 3783 (Bz--25120, N); Voogd 17 (Bz--25114); Yates 1609 (Bz--24142, N). JAVA: Backer 1934 (Bz--25059), 2824 (Bz--25062), 12027 (Bz--25060), 16567 (Bz--25069, Bz--25070, Bz--25678), 17102 (Bz--25067, Bz--25068, Bz--25679, Ut--33848a), 18301 (Bz--25058, Ut--33847a), 30465 (Bz--25061, Bz--25682); Bakhuizen van den Brink 1140 (Bz--25077); Beumée 4440 (Bz--25083); Boschwezen 1325 [Herb. Bot. Var. 482] (Bz--25064); Burger 2095 (Bz--25075); Buysman 250 (Ut--44160--cotype); Jansen 5715a (Bz--25084); Koorders 9817b [283\*] (Bz--24191), 9828b [284\*] (Bz--24192), 9831b [1034a] (Bz--24186), 9832b [1185a] (Bz--24187), 9833b (Bz--24185), 9834b (Bz--24189), 9835b [368] (Bz--24153), 9836b [366] (Bz--24154), 9837b [220d] (Bz--24212), 9839b [96d] (Bz--24204), 9840b, in part (Bz--24203), 9841b [10781] (Bz--24207), 9842b [11081] (Bz--24208), 9843b [716j] (Bz--24177), 9844b [716j] (Bz--24176), 9845b (Bz--24170), 9846b (Bz--24211), 11687b [1806m] (Bz--24165), 11688b [1806m] (Bz--24164), 11689b [1817] (Bz--24198), 11690b [1634m] (Bz--24193, Bz--25658), 11694b [1817\*] (Bz--24197), 11854b [1185a] (Bz--24183), 12846b [721j] (Bz--24178), 12858b (Bz--24217), 13404b (Bz--24161), 13533b [1718m] (Bz--24166), 13534b [1718m] (Bz--24162), 13536b [1718m] (Bz--24195), 13870b (Bz--24188), 14245b [3\*] (Bz--24159), 14302b [1817\*] (Bz--24160), 14304b [1806m] (Bz--24167), 14308b [1718m] (Bz--24163), 15707b [1185a] (Bz--24184), 20650b (Bz--24218), 22593b [2335\*] (Bz--24179), 23468b [1355\*] (Bz--24174, Bz--24175), 23640b [1322\*] (Bz--24216), 25004b [65c] (Bz--24213),

25328b [365b] (Bz-24201), 26107b [220d] (Bz-24199), 26566b [2448aa] (Bz-24157, Bz-24158), 26721b [290\*] (Bz-24190), 27606b [389\*] (Bz-24181), 27614b [314\*] (Bz-24180), 28171b [220d] (Bz-24200), 28474b [1108i] (Bz-24209), 28477b (Bz-24171, Bz-24172), 29589b (Bz-24196), 30135b [2507aa] (Bz-24156), 30359b [896\*] (Bz-24155), 32987b [890\*] (Bz-24169), 33903b [219\*] (Bz-24205), 34153b [1108i] (Bz-24210), 34268b [1185] (Bz-24182), 35727b [15\*] (Bz-24168), 36556b [1630\*] (Bz-24206), 36949b [1634m] (Bz-24194), 37591b [21] (Bz-24173), 38449b [4272m] (Bz-24219), 42847b (Bz-24215), s.n. [I.86] (Bz-25066); F. Kramer 5715 (Bz-25078), 5715a (Bz-25079); Leeuwen-Reijnvaan s.n. [Dec. '09] (Bz-25063); Partodimedjo 2 [Boschproefst. Ja.1574] (Bz-25071); Saimoendt 63 (Bz-25076); Soekarman 3 [Boschproefst. Ja.2716] (Bz-24147); Soemadi 6 [Boschproefst. Ja.1781] (Bz-25072); Teijsmann 3783 (Bz-25121); Timmer 6213 [Boschproefst. 2186] (Bz-25081); Ultée 149 (Bz-25080), 1686 (Bz-25082); Veer 34 [Boschproefst. Ja.3286] (Bz-24146); Vincent 5751 [Boschproefst. 3283] (Bz-25085), 5751a [Boschproefst. 3284] (Bz-25086); Wagiman 57 [Boschproefst. Ja. 1859] (Bz-25073, Bz-25074). BRITISH NORTH BORNEO: Castro & Melegrito 1592 (Bz-25049). BORNEO: Atjil & Matali 54 [3355; Boschproefst. BB.10401] (Bz-25047, Bz-25048); Dachlan 46 [3522; Boschproefst. BB.10724] (Bz-25046), 3520 [Boschproefst. BB.10722] (Bz-25050); Moulton 6718 (Bz-25051); Obi 103 [3449; Boschproefst. BB.10585] (Bz-25045). CELEBES: Bish 186 [Boschproefst. BB.18647] (Bz-23835); Boschbouwproefstation BB.13761 (Bz-25097, Bz-25098); Collector undesignated 5592 (Bz-24898); Gobel 18 [Boschproefst. BB.19411] (Bz-23832), 19 [Boschproefst. BB.19412] (Bz-23831); Ham s.n. (Ut-57872); Herb. Bogoriense 23839 (Bz); Kjellberg 532 (Bz-24150, s), 760 (Bz-24151, s), 779 (Bz-24220, Bz-24221, s), 1843 (Bz-24149); Koorders 19543b [55] (Bz-23857, Bz-23858), 19544b (Bz-23846, Bz-23847, Bz-23848, in part, Bz-25649, N-photo, Z-photo), 19545b (Bz-23849), 19546b [2375] (Bz-23853, Bz-23854), 19548b [1391] (Bz-23844, Bz-23845, Bz-25650), 19549b [1514] (Bz-23856), 19550b [2222] (Bz-23861), 19551b [303] (Bz-25105, Bz-25106, Bz-25107, Bz-25651), 19552b [3028] (Bz-23855), 19554b [1143] (Bz-25104, Bz-25652, Bz-25848, in part), 19556b [2258] (Bz-23850), 19558b [1912] (Bz-23859, Bz-23860, Bz-25653), 19559b [2321] (Bz-23851, Bz-23852, Bz-25672), 19560b [1087] (Bz-25109, Bz-25110, Bz-25654); Laleno 20 [Boschproefst. BB.18109] (Bz-23830), 45 [Boschproefst. BB.19440] (Bz-23833), 49 [Boschproefst. BB.19444] (Bz-23834); Maëngkom 13 [Boschproefst. BB. 5566] (Bz-23837), 60 [Boschproefst. BB.7551] (Bz-25096); Mumeh 2 [Boschproefst. BB.20284] (Bz-23829); Palit 16 [Boschproefst. BB.29476] (Bz-25431); Politon 16 [Boschproefst. BB.

31495] (Bz--25094), 44 [Boschproefst. BB.31869] (Bz--25093); Teijsmann 11994 (Bz--25100, Bz--25101); Walangitang 6 [Boschproefst. BB.5159] (Bz--23836), 21 [Boschproefst. BB.13742] (Bz--25102), 78 [Boschproefst. Cel./I.78] (Bz--25103); Waturandang 246 [Boschproefst. BB.21775] (Bz--23862), 281 [Boschproefst. Cel./V.249] (Bz--23828, Bz--25648), 617 [Boschproefst. Cel./V.383] (Bz--23825), 618 [Boschproefst. Cel./V.384] (Bz--23826), 619 [Boschproefst. Cel./V.385] (Bz--23824); Wullur 23 [Boschproefst. BB.13761] (Bz--25095); Yamel 7 [Boschproefst. BB.31837] (Bz--25099). MOENA ISLAND: Collector undesignated 3783 H.B. (Ut-44162). MOLUCCA ISLANDS: Batjan: Herb. Hort. Bot. Bogor. XII (Bz--25087). Buru: Oersipuny 80 [Boschproefst. BB.21489] (Bz--25433). Halmaheira: Beguín 2019 (Bz--23816, Bz--25647); H. J. Lam 3636, in part (N). Morotal: Kostermans & Tangkilison 120 [Boschproefst. BB.33813] (Bz--72600, Bz--72601); H. J. Lam 3636, in part (Bz--23815); Tangkilison 200 [Boschproefst. BB.33873] (Bz--72879). Obi: Haan 317 [Boschproefst. BB.23819] (Bz--25430). Soelabesi: Atje 406 [Hulstijn 406] (Bz--23817, Bz--23818, N). NEW GUINEA: Dutch New Guinea: Aet 238 (Bz--72970); Kostermans 101 [Boschproefst. BB.33334] (Bz--72794, Bz--72795), 153 [Boschproefst. BB.33376] (Bz--72826, Bz--72827), 235 [Boschproefst. BB.33439] (Bz--72830, Bz--72831), 237 [Boschproefst. BB.33441] (Bz--72833), 274 [Boschproefst. BB.33470] (Bz--72828, Bz--72829); Lundquist 39 [Boschproefst. BB.32658] (Bz--25089), 109 [Boschproefst. BB.32828] (Bz--72969), 148 [Boschproefst. BB.32867] (Bz--72937); Salverda 528 [Boschproefst. BB.22515] (Bz--23819, N); Soehanda & Ilham 16 [Boschproefst. BB.33264] (Bz--72793), 30 [Boschproefst. BB.33278] (Bz--72832). AROE ISLANDS: Oedjir: Buwalda 452 [Boschproefst. BB.25486] (Bz--25090). FIJI ISLANDS: Viti Levu: Degener 14481 (A, N, N); J. W. Gillespie 2953 (N), 4164 (Bz--24321, N), 4164.1 (Du--235263); Greenwood 344a (N); A. C. Smith 4307 (N), 6295 (N), 8881 (Z), 9119 (Hk). CULTIVATED: Java: Herb. Hort. Bot. Bogor. XI.I.35 (Bz--25839, Bz), XI.J.1 (Bz--25846, N), XI.J.35 (Bz--25838, Bz--26589, Bz, Bz, N), XI.K.10 (Bz--25858, Bz--25859, Bz--26588), XI.K.20 (Bz--25868, N), XIII.J.84 (Bz--25252, Bz, Bz), s.n. [from Sumatra] (Bz--25052, Bz--25053, Bz--25054, Bz--25055, Bz--25056, Bz--25115, Bz--25116, Bz--25117, Bz--25118). LOCALITY OF COLLECTION UNDETERMINED: Collector undesignated 441 (Ut--39904), s.n. [Delor Runnon, May '79] (Pr); Herb. Bogoriense 25711 (Bz); Herb. A. Gray s.n. (T).

VITEX QUINATA var. WITTROCKIANA Moldenke, Geogr. Distrib. Avicenn. 40, nom. nud. (1939); Phytologia 1: 440. 1940.

Literature: Moldenke, Geogr. Distrib. Avicenn. 40. 1939; Moldenke, Phytologia 1: 440. 1940; Moldenke, Known Geogr. Dis-

trib. Verbenac., [ed. 1], 75 & 104. 1942; H. N. & A. L. Moldenke, *Plant Life* 2: 89. 1948; Moldenke, *Known Geogr. Distrib. Verbenac.*, [ed. 2], 166 & 202. 1949.

This variety differs from the typical form of the species in its smaller inflorescences, which are only 10--12 cm. long and are less thyrsoïd, often not branched, with few-flowered and very loose cymes, which are long-stipitate and divaricate-furcate with long and very slender branches, and elongate filiform pedicels 3-5 mm. long, the branchlets, twigs, peduncles, rachis, cyme-branches, pedicels, petioles, and calyx glabrous throughout, and the flowers larger.

The type of the variety was collected by Benedict Balansa (no. 3815) in cultivation in Tonkin, Indochina, in May of 1887, and is deposited in the herbarium of the Royal Botanic Gardens at Kew. Thus far it is known only from cultivated material. It is named in honor of my recently departed friend and colleague, Gustave Ludwig Wittrock (1895--1954), expert on plants used for food or other purposes by the Amerinds, on economic plants in general, and on the genus *Agoseris*, and for many years in charge of the Asiatic Herbarium at the New York Botanical Garden.

Citations: CULTIVATED: Hongkong: Herb. Hongkong Bot. Gard. 6 (K, N). Indochina: Balansa 3815 (K-type).

VITEX RADULA Mildbr. ex Pieper in Engl., *Bot. Jahrb.* 62, Beibl.

141 ["142"]: 42, 55, & 84. 1928; Fedde, *Repert.* 26: 161. 1929.

Literature: Pieper in Engl., *Bot. Jahrb.* 62, Beibl. 141 ["142"]: 42, 55, & 84. 1928; Pieper in Fedde, *Repert.* 26: 161. 1929; Hill, *Ind. Kew. Suppl.* 8: 249. 1933; Moldenke, *Known Geogr. Distrib. Verbenac.*, [ed. 1], 50, 51, & 104 (1942) and [ed. 2], 117, 120, & 202. 1949.

Shrub or small tree; branchlets shortly 4-angled, short-hirtous; leaves 3-5-foliolate; petioles 5-8 cm. long, shortly fuscous-hirtous; leaflet-blades very rough above, hirsute beneath, the central one elliptic, acuminate at the apex, on a petiolule 1.5 cm. long, the lateral ones obliquely elliptic, acuminate, on shorter petiolules; inflorescence terminal, paniculate, fuscous-velutinous; bractlets minute; fruiting-calyx patelliform, fuscous-hirtous and sparsely glandulose on the outside, the rim obtusely 5-lobed, the lobes apiculate; fruit glabrous, about 6 mm. wide, drupaceous, orange-colored, densely glandulose, the mesocarp very thin.

The type of this species was collected by Adolf Ferdinand Stolz (no. 1398) at Kymbila, Nyasaland, and is deposited in the herbarium of the Botanisches Museum at Berlin. Pieper cites also Busse 2984 from Lindi, Tanganyika Territory. Thus far it is known only from these two collections.

Citations: BRITISH NYASALAND PROTECTORATE: Stolz 1398 (N-cotype, N-photo of cotype, S-cotype, Z-photo of cotype).

VITEX RAPINI Beauvis., *Gen. Montrouz.* 66-68. 1901.

Synonymy: Rapinia triphylla Montr. ex Beauvis., Gen. Montrouz. 66. 1901. Rapinia collina vars. a & b Montr. ex Beauvis., Gen. Montrouz. 66. 1901.

Literature: Beauvis., Gen. Montrouz. 66—68. 1901; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 1], 68 & 104. 1942; H. N. & A. L. Moldenke, Plant Life 2: 78. 1948; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 2], 151 & 202. 1949.

Shrub 2--5 m. tall; leaves opposite, 3--5-foliolate; stipule-scars more or less conspicuous; petioles 2--6 cm. long, narrowly canaliculate above; petiolules broadly canaliculate above; leaflets mostly very unequal, the blades varying from elliptic to ovate or suborbicular, obtuse at the apex, varying from truncate to almost heart-shaped or slightly attenuate at the base, often asymmetric, the central one largest, 4.5--7.5 cm. long, 3.5--6.3 cm. wide; inflorescence cymose, axillary, 3--5-flowered; peduncles 10--15 [rarely 20] mm. long; pedicels 6--9 [rarely 12] mm. long; flowers similar to those of Neorapinia collina (Montr.) Moldenke.

The species is based on Montrouzier 185 and 186 in the Leiden herbarium and 280 in the Montpellier herbarium, collected on hills and mountains on Art Island, New Caledonia. Beauvisage cites also Balansa 474 and 1834. He says that Viellard 993, 994, and 3064 and Balansa 1835 may also belong here, but have smaller leaves and many-flowered cymes. The species has been collected at an altitude of 300 meters and is apparently endemic to New Caledonia.

The "stipule-scars" mentioned in the description of this plant may actually refer to annulations at the nodes very often seen in this genus and other genera of Verbenaceae, whose leaves are exstipulate.

Citations: NEW CALEDONIA: Deplanche 486 (Br, C, E--photo, N--photo, V, Z--photo); Schlechter 15249 [Herb. Hort. Then. I:5999] (Br).

VITEX RAPINIOIDES Guillaum., Journ. Arn. Arb. 13: 27. 1932.

Synonymy: Vitex rapinoides Guillaum. ex Moldenke, Known Geogr. Distrib. Verbenac., [ed. 1], 68 & 104, sphalm. 1942.

Literature: Guillaum., Journ. Arn. Arb. 13: 27. 1932; Hill, Ind. Kew. Suppl. 9: 297. 1938; Moldenke, Suppl. List Common Names 9 & 15. 1940; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 1], 68 & 104. 1942; Moldenke, Phytologia 2: 122. 1944; Moldenke, Alph. List Invalid Names Suppl. 1: 29. 1947; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 2], 150 & 202. 1949.

Large tree, to 20 m. tall; trunk 60 cm. in diameter; wood yellow, very hard but also very faulty; branches yellow, puberulent when young; leaves 3--5-foliolate; petioles 2.5--5 cm. long, reddish-puberulent when young, glabrescent in age; leaflet-blades membranous, rigid, ovate or ovate-lanceolate to lanceolate, 3--9 cm. long, 1.5--5 cm. wide, acuminate at the apex, obtuse or cuneate at the base, red-puberulent when young later glabrescent and glandular-punctate beneath; petiolules

red-puberulent when young, later glabrescent; inflorescence cymose, to 4 cm. long, 3-flowered; peduncles slender, 1--1.5 cm. long, sparsely red-puberulent, bearing 2 bractlets at the apex; bractlets filiform, 2--3 mm. long, red-puberulent; pedicels 1.5--2 cm. long, the lateral ones with 2 opposite prophylla which are 1 mm. long and red-glandulose-puberulent; calyx campanulate, about 4 mm. long, densely red-glandulose outside, the margin truncate, lanuginous with red hairs in 4-penicellate fashion; corolla pink or red, about 2 cm. long, densely red-puberulent except at the base, the tube about 1.5 cm. long, lanuginous within above the insertion of the stamens, the lobes rounded, the larger one about 6 mm. long, lanuginous within; stamens exerted; filaments inserted about 3 mm. above the base of the corolla-tube, lanuginous; style elongate; stigma bifid; ovary globose, glabrous, 4-celled; fruiting-calyx patelliform, about 6 mm. wide; fruit red or pink, depressed-globose, about 1.3 cm. long and 1.5 cm. wide, 4-celled, the mesocarp about 5 mm. thick.

The type of this species was collected by J. P. Wilson (Kajewski 992) in September of 1929 on the seashore at an altitude of about 50 feet, at Aname, on the west coast of Aneityum Island, New Hebrides, where it is described as being "common", with "bell-shaped flowers". It has been collected in anthesis in April, May, and September, and in fruit in April and May. The wood is used locally in the construction of native homes. The tree is common on the islands and is called "incdic" and "nay-mof-si" or "nay-mofsi". It ascends to 300 meters altitude in the rainforests. The flowers are said to be pink and bell-shaped. The fruit is pink or red, about half an inch long and 5/8 inch in diameter.

Guillaumin cites also J. P. Wilson 211 from Efate and 299 from Eromangá. The latter is undoubtedly the Kajewski 299 cited below. The species is most closely related to V. rapini Beauvis. which, however, has much thinner leaflet-blades of different shape. The Efate collection is remarkable because of its more elongated oval-lanceolate or lanceolate leaflet-blades.

Citations: NEW HEBRIDES: Aneityum: J. P. Wilson s.n. [Kajewski 992] (La--isotype). Efate: Kajewski 211 (La). Eromanga: Kajewski 299 (La).

VITEX REGNELLIANA Moldenke, Geogr. Distrib. Avicenn. 27, nom. nud. 1939; Phytologia 2: 30--31. 1941.

Literature: Moldenke, Geogr. Distrib. Avicenn. 27. 1939; Moldenke, Phytologia 2: 30--31. 1941; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 1], 39 & 104. 1942; H. N. & A. L. Moldenke, Plant Life 2: 78. 1948; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 2], 95 & 202. 1949.

Shrub or tree; branchlets slender, medullose, obtusely tetragonal, grayish, compressed and rather ampliate at the nodes, puberulent or short-pubescent when young, becoming glabrate in age; twigs slender, tetragonal, compressed, very densely velutinous with ferruginous villous-tomentose pubescence, ampliate-compressed at the nodes; nodes annulate; principal internodes

1--6 cm. long; leaf-scars very large and corky, greatly elevated; buds densely ferruginous-villous or -velutinous; leaves decussate-opposite, 3-foliolate; petioles slender, 4--10.5 cm. long, slightly ampliate at the base, flattened above, very densely velutinous-villous or tomentose with ferruginous hairs; leaflets subequal, sessile or subsessile; leaflet-blades thin-chartaceous, uniformly dark- or bright-green on both surfaces under the ferruginous tomentum, the central one oblong, narrow-elliptic, or oblanceolate, 5.5--10 cm. long, 1.5--3.2 cm. wide, acute or very abruptly short-acuminate at the apex, entire, acute or obtuse at the base, very densely velutinous-villous on both surfaces or somewhat more tomentose beneath, the pubescence golden or ferruginous, the lateral leaflets similar in all respects only often somewhat inequilateral and usually more obtuse at the base; midrib slender, flat or subprominent above, prominent beneath; secondaries slender, about 10 per side, mostly hidden by the long pubescence on both surfaces or prominent beneath; vein and veinlet reticulation not discernible above, mostly obscure beneath or sometimes the largest parts slightly subprominent beneath; inflorescence axillary, cymose, 3--8 cm. long, 2--4.5 cm. wide, 1--3 times dichotomous, dense, the branches much abbreviated, densely ferruginous-velutinous or villous-tomentose throughout, conspicuously bracteate; peduncles slender, 1.5--5.2 cm. long, flattened, densely ferruginous-velutinous or villous-tomentose like the twigs and petioles; pedicels very slender, 1--2 mm. long, or obsolete on lateral flowers; bracts numerous, simple, oblong or lanceolate, 1--1.8 cm. long, densely velutinous like the leaflets, sessile, acute; bractlets linear, 3--6 mm. long, densely ferruginous-pubescent; prophylla linear, about 1 mm. long, hidden by the tomentum; calyx campanulate, densely ferruginous-velutinous with more or less antrorse hairs on the outside, the tube 5--6 mm. long, 4--7 mm. wide, its rim caudate-lobed, the lobes lanceolate, about 5 mm. long and 1.5 mm. wide, attenuate-acute; corolla hypocrateriform, violet or white, its tube broadly cylindrical, about 1.5 cm. long and 3.5 mm. wide, not ampliate at the apex, densely ferruginous-tomentose on the outside, its limb conspicuously 2-lipped, the 4 small lobes oblong-ovate, about 6 mm. long and 2 mm. wide, blunt at the apex, the central lower lobe greatly enlarged, about 10 mm. long and 6 mm. wide, rounded, puberulent on both surfaces, bearded at the base within; stamens and style exerted less than 1 cm. from the corolla-throat; fruiting-calyx and fruit not known.

The type of this handsome species was collected by Don Bento José Pickel (no. 3211) in a thicket at Tapera, Pernambuco, Brazil, on January 26, 1933, and is deposited in the herbarium of the Catholic University of America at Washington. It is named in honor of Anders Fredrik Regnell, famous explorer and botanist, to whom we owe so much of our knowledge of the Brazilian flora. It has been collected in anthesis from November to January, and has in the past been confused with V. polygama Cham., to which it is obviously closely related. Mature leaves, as

well as longhand notes, are found on the Ridley, Lea, and Ramage specimens at the British Museum.

Citations: BRAZIL: Pernambuco: Pickel 3211 (Ba--isotype, Ca--520586--isotype, E--photo of type, F--702499--isotype, G--isotype, I--type, I--isotype, Mi--isotype, N--isotype, N--photo of type, N--photo of isotype, S--isotype, Z--photo of type, Z--photo of isotype); Ridley, Lea, & Ramage s.n. [24 Nov.] (Bm), s. n. [12 Dec.] (Bm). São Paulo: Santoro s.n. [Fazenda Santa Elisa, November 25, 1936; Herb. Inst. Agron. Est. S. Paulo 855] (N).

VITEX REHMANNI Gürke, Bull. Herb. Boiss. 4: 818. 1896.

Synonymy: Vitex rehmannii Gürke ex Moldenke, Alph. List Invalid Names 55, in syn. 1942.

Literature: Gürke, Bull. Herb. Boiss. 4: 818. 1896; H. H. W. Pearson in Thiselt.-Dyer, Fl. Cap. 5: 214--215. 1901; Galpin, Bot. Surv. S. Afr. Mem. 7: 23--25, fig. 50. 1925; Pieper in Engl., Bot. Jahrb. 62, Beibl. 141 ["142"]: 52, 74, & 84. 1928; Moldenke, Alph. List Common Names 30. 1939; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 1], 52 & 104. 1942; Moldenke, Alph. List Invalid Names 55. 1942; Moldenke, Phytologia 2: 122. 1944; H. N. & A. L. Moldenke, Plant Life 2: 78. 1948; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 2], 122 & 202. 1949.

Illustrations: Galpin, Bot. Surv. S. Afr. Mem. 7: fig. 50. 1925.

A shrub or small tree, to 10 m. tall; bark black, rough; trunk 22--30 cm. in diameter; wood yellowish-gray, of medium hardness and weight, with straight somewhat short grain of fair strength, works easily, takes a good finish, not attacked by termites after being properly seasoned; branches with short internodes and prominent leaf-scars, finely tomentose on the younger parts; leaves decussate-opposite, petiolate, 3--5-foliolate, green in March; petioles subangular, 1--4 cm. long, finely pubescent; leaflet-blades subcoriaceous, oblong-elliptic or elliptic-lanceolate, varying from acuminate or acute to subacute or obtuse at the apex, entire and sinuate along the margins, cuneate at the base, subsessile or on finely pubescent petiolules 2--7 mm. long, profusely glandulose, glabrous above, finely pubescent on the venation beneath, otherwise puberulous or glabrous beneath, the central one 2--7 cm. long, 0.5--2.2 cm. wide, the lateral ones often much smaller; secondaries 8--16 per side, obscure above, distinct beneath; inflorescence cymose, pedunculate, axillary, divaricate, bracteate, equaling or slightly surpassing the subtending leaves, finely tomentose; bracts linear-spatulate, pubescent and glandulose, the lower ones 5--10 mm. long; flowers short-pedicellate, bracteolate, about 1 cm. long; calyx campanulate, its tube 2--4 mm. long, 10-nerved, prominently 10-ribbed, glabrous within, finely pubescent and profusely glandulose outside, its rim spreading, shortly 5-lobed, the lobes ovate-triangular, 1--1.5 mm. long, 1--1.5 mm. wide at the base, acute or short-apiculate at the apex, keeled, finely pubescent and glandular; corolla pale bright-mauve or white and tinged inside on the lower lip, its tube straight, about 6 mm. long, pro-

fusely glandulose and pubescent outside on the upper three-quarters of its length, puberulent in the anterior portion but otherwise glabrous within, its lobes pubescent and glandulose; stamens inserted below the middle of the corolla-tube, included; anthers dark-purple; filaments villous at the base; ovary densely pubescent and glandulose on the upper half; fruit drupaceous, obconic, 5--6 mm. long, 3--4 mm. wide, shorter than the subtending accrescent fruiting-calyx, profusely glandulose.

The species is based on Rehmann 5422 from Strydpoort in the Makapans Mountains, Transvaal, Union of South Africa. The Meeuse 9491 collection is a topotype collection. Pearson and Pieper both also cite Nelson 101 from Nylstrom, Transvaal, and Gerrard 1510 and Sutherland s.n. from Natal. Pieper places the species in the subgenus Holmskioldiopsis Pieper.

The species inhabits white sandy flats in sour bushveld, mixed bushveld on rocky slopes, and "thorns" areas. Galpin states that "it is abundant and increasing in the sandveld to which it is strictly confined" in the Springbok flats area of the Cape of Good Hope. It has been collected at altitudes of from 2000 to 6000 feet, flowering in December and fruiting in April. It suffers from frost and puts out adventitious shoots. Common names are "manohani", "mokocele", "pijsteel", and "thorns". Galpin states that "owing to the many stronger timbers available, it is little used locally, but should be useful for general purposes. Used by natives for stools. The young twigs have hollow stems and are used as stems for tobacco pipes, hence the local name 'pijsteel' or 'pypsteel' and also "good for hammer handles, etc."

Citations: UNION OF SOUTH AFRICA: Cape of Good Hope: Galpin 282M (Af, N--photo, S--photo, Z--photo). Natal: Dimock Brown 60 [J. M. Wood 4463] (Na--6115, Na--7541); Gerstner 614 (Cb); Haygarth s.n. [J. M. Wood 10777] (Vt); Kuntze s.n. [17/3/94] (N); J. M. Wood 6794 (N, N--photo, Na--8556, Z--photo). Transvaal: Codd 969 (Af, Ss); Dyer & Verdoorn 4254 (Z); Leemann 20 (S); Leendertz 2314 (N); Meeuse 9491 (Ss), s.n. (Cb); Mogg s.n. [11-12-1934] (Ss); Pole-Evans 3102 [21] (S); Son s.n. [Herb. Transvaal Mus. 30440] (N, Rh); Thode A.451 (Na--23494), A.1760 (Na--25140).

VITEX REHMANNI f. SUBTOMETOSA Moldenke, Phytologia 5: 20. 1954.

Synonymy: Vitex rehmannii f. subtomentosa Moldenke, Trav.

Lab. Bot. Syst. Brux. 16: 66, sphalm. 1955.

Literature: Moldenke, Phytologia 5: 20. 1954; Trav. Lab. Bot. Syst. Brux. 16: 66. 1955.

This form differs from the typical form of the species in having the lower leaflet-surface densely white-subtomentose.

The type of the form was collected by J. E. Repton (no. 2781) on the upper south slope of the Wonderboom Reserve, Pretoria, Transvaal, Union of South Africa, on January 4, 1946, and is deposited in the National Herbarium at Pretoria. It has been col-

lected at an altitude of 3000 feet, and the corollas are described as pale-blue, the tree 8-9 feet tall.

Citations: UNION OF SOUTH AFRICA: Transvaal: Repton 2781 (Z-isotype); Story 1520 (Cb).

VITEX RESINIFERA Moldenke, Phytologia 3: 446-447. 1951.

Shrub, 1-2 m. tall; branches and branchlets slender, grayish-brown, obtusely tetragonal, densely puberulent on the younger parts, glabrescent in age, lenticellate; nodes not annulate; principal internodes 0.6-3 cm. long, mostly abbreviated; leaf-scars minute; leaves decussate-opposite, 1-foliolate; petioles very slender, 6-14 mm. long, flattened above, minutely appressed-puberulous, brunnescent in drying; blades chartaceous, brunnescent in drying, dark and shiny above, lighter beneath, narrowly elliptic, 2.5-6.5 cm. long, 8-22 mm. wide, acute or short-acuminate at the apex, entire, mostly obtuse or rounded (rarely acute) at the base, densely resinous-punctulate on both surfaces, more or less obscurely and very minutely puberulent beneath; midrib slender, impressed above, prominent beneath; secondaries filiform, about 6 per side, arcuate-ascending, flat or very slightly subprominulous above, prominulous beneath; veinlet reticulation very abundant and fine, often subprominulous above, flat beneath or the larger portions subprominulous; inflorescence axillary, usually shorter or subequaling the subtending leaves, 1-3-flowered, conspicuously bracteolate; peduncles slender, 1.3-3 cm. long, appressed-puberulous, flattened, terminated by a pair of conspicuous bractlets which are narrowly oblong, about 5 mm. long and 1 mm. wide, minutely puberulous; pedicels filiform, 5-7 mm. long under the central floret, 1-3 mm. long under the lateral ones which are borne on filiform cyme-branches about 10 mm. long, minutely appressed-puberulous; calyx membranous, campanulate, deeply lobed to near the base, minutely appressed-puberulous, the tube about 2 mm. long and wide, the 5 equal lobes oblong-lanceolate, 4-5 mm. long and 1-1.5 mm. wide, acute at the apex; corolla-tube green, broadly cylindrical, about 6 mm. long, ampliate at the apex, not arched, minutely appressed-puberulent on the outside, the limb labiate, the upper lip hooded, 2-lobed, green, the lower lip 3-lobed, white, the central lobe rounded; fruiting-calyx unchanged except that the united portion is much broader; fruit drupaceous, globose, nigrescent in drying, about 4 mm. long and wide.

The type of this endemic species was collected by Joseph Marie Henri Alfred Perrier de la Bâthie (no. 1727) on granitic soil in woods on Mount Ambokibenga, Milanja, Madagascar, in May of 1904, and is deposited in the herbarium of the Muséum National d'Histoire Naturelle at Paris. It is known only from the original collection.

Citations: MADAGASCAR: Perrier de la Bâthie 1727 (N-isotype, N-photo of type, P-type, Z-photo of type).

VITEX RIVULARIS Gürke in Engl., Bot. Jahrb. 33: 297-298. 1904.

Synonymy: Vitex cilio foliolata A. Chev., Expl. Bot. Afr.

Occid. Franç. 1: 506, hyponym. 1920. Vitex cilio-foliolata A. Chev. ex Pieper in Engl., Bot. Jahrb. 62, Beibl. 141 ["142"]:80. 1928. Vitex ciliofoliolata A. Chev. ex Moldenke, Alph. List Invalid Names 52, in syn. 1942.

Literature: Gürke in Engl., Bot. Jahrb. 33: 297—298. 1904; A. Chev., Expl. Bot. Afr. Occid. Franç. 1: 506. 1920; Hill, Ind. Kew. Suppl. 6: 219. 1926; Pieper in Engl., Bot. Jahrb. 62, Beibl. 141 ["142"]: 43, 56, 80, & 84. 1928; DeWild., Plant. Bequaert. 5: 18. 1929; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 1], 47, 48, & 104. 1942; Moldenke, Alph. List Invalid Names 52. 1942; Moldenke, Phytologia 2: 122. 1944; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 2], 112—114 & 202. 1949.

Tree, the trunk to 8 m. tall, with strongly developed pith; branches drooping; leaves 5—7-foliolate; petioles 10—15 cm. long, flat above, glabrous; leaflet-blades thin-membranous, broadly lanceolate, very long-acuminate at the apex, entire, attenuate at the base into the petiolules, glabrous or subglabrous above with a few scattered hairs, more densely pilosulous along the secondaries, pubescent and yellowish-glandulose beneath, the central one (exclusive of the acumination) about 10 cm. long and 4 cm. wide or 2 1/2 times as long as wide, the lateral ones smaller, the basal ones about 5 cm. long and 2 cm. wide; petiolules 7—15 mm. long, sparsely pilose except at the densely tomentose base; inflorescence axillary, cymose, very lax, in the upper leaf-axils, the branches scattered-pilose, more densely so at the base of each furcation; peduncles very long, 9—12 cm. long; bractlets filiform and 3—5 mm. long in the upper branches of the inflorescence, probably longer on the lower branches but there caducous; calyx cupuliform at time of anthesis, yellow-glandulose on the outer surface, the rim 5-dentate; fruiting-calyx greatly accrescent, globose, with distinct but flattened teeth.

The type of this species was collected in April, 1897, in bud stage, by Georg August Zenker (no. 1333) on the banks of the Lokundje, Bipinde, Cameroons. The type of V. cilio-foliolata was collected by Auguste J. B. Chevalier (no. 19097) at Guidéko, in the basin of the Upper Sassandra, Ivory Coast, on June 16, 1907. The species is found in primeval and river-bank forests, and common names are "akwakora-gyahini", "antelope's garden egg", "kataboawin", "old man's shin-bone", "ötwe-ntörowa", and "ububan". Pieper cites in addition Zenker 4099c and places the species in Sect. Chrysomallum, where it is distinguished by its very lax inflorescences and very long-acuminate leaflets. It is closely related to V. vermoeseni De Wild., which see for copious notes on the differences between the two.

Citations: SOUTHERN NIGERIA: J. D. Kennedy 910 (S). CAMEROONS: Zenker 1333 (N—istype, N—photo of isotype, S—istype, Z—photo of isotype), 2691a (S), 2909 (S), 3764 (S), 4205 (Af, Br, N, S), 4219 (Af, Af, Br, Br, S), 4503 (Af, Br, N—photo, S, Z—photo), 4795 (Br, Br, S). BELGIAN CONGO: Bredo 4248 (Br);

Vanderyst 3105 (Br); Vermoesen 2142 (Br, Br).

VITEX ROBYNSI DeWild., Pl. Bequaert. 5: 13—14. 1929.

Literature: DeWild., Pl. Bequaert. 5: 13—14. 1929; Hill, Ind. Kew. Suppl. 8: 249. 1933; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 1], 49 & 104. 1942; H. N. & A. L. Moldenke, Plant Life 2: 79. 1948; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 2], 115 & 202. 1949.

Shrub, to 3 m. tall; branches slender, ascending, tetragonal, more or less alate, more or less velutinous toward the tip; leaves 5-foliolate; petioles 6—10 cm. long, more or less clearly canaliculate above, subalate on the angles; petiolules 2—10 mm. long, or subobsolete on lateral leaflets; leaflet-blades obovate or elliptic-lanceolate, 5—10 cm. long, 2—4 cm. wide, more or less acuminate at the apex, entire, the lateral ones more or less cuneiformly narrowed at the base and subinequilateral, the central one cuneiform and equilateral at the base, all velutinous-scabrous above, densely short-tomentose beneath, non-glandulose; secondaries 6—8 per side; inflorescence axillary and terminal, more or less branched, loose, many-flowered, forming a terminal panicle, the floriferous portion 8—12 cm. long, the inflorescence-branches simple or dichotomous, to 1.5 cm. long; peduncles naked, 8—16 mm. long, short-pubescent; bractlets filiform, velutinous, caducous; flowers not known; fruiting pedicels to 15 mm. long; fruiting-calyx accrescent, subglabrous outside, its rim truncate, obscurely 5-dentate; fruit yellowish, subglobose, 6—7 mm. long and wide, the epidermis exfoliating.

The type of this beautiful species was collected by Frans Hubert Edouard Arthur Walter Robyns (no. 1913) — in whose honor it is named — in a shrubby savanna at Kasenga, at an altitude of about 970 meters, Belgian Congo, on April 8, 1926, and is deposited in the herbarium of the Jardin Botanique de l'Etat at Brussels. DeWildeman notes that because of the absence of flowers the species can be classified only with certainty in Sect. Terminales as defined by Pieper. Not being able to see the upper lip of the corolla, it cannot be stated with certainty that it belongs in the group Quinquelobatae, but it seems to belong there because of its apparent close affinity with V. volkensis Gürke and V. buchananii J. G. Baker (misspelled "Buchanani" by DeWildeman). It seems to come closest to the latter species because of its long petioles and leaflet-blades. It differs from V. volkensis by the absence of the many circular glands which are subimmersed in the leaflet-blades of that species. In the classification of Baker, the species would come close to V. thyrsiflora J. G. Baker, from which it differs in having the leaflet-blades clearly velutinous-tomentose beneath.

Citations: NORTHERN RHODESIA: Bredo 4008 (Br, N). BELGIAN CONGO: Robyns 1913 (Br—type, Br—-isotype, N—-photo of type, Z—-photo of type).

VITEX RUBRA Moldenke, Phytologia 3: 447. 1951.

Shrub or small tree; branches and branchlets medium-slender, gray, often lichen-encrusted, obtusely tetragonal, appressed-puberulent, glabrescent in age; nodes not annulate; principal internodes much abbreviated and about 5 mm. long, elongated to 4 cm. on larger branchlets; leaves decussate-opposite, 1-foliolate; petioles rather stoutish, 2--15 mm. long, flat and canaliculate above, minutely puberulous; blades coriaceous, gray-green on both surfaces and rather shiny, elliptic, 2.5--6.5 cm. long, 1.2--4.2 cm. wide, rounded or emarginate at the apex, entire and plainly revolute along the margins, acute or short-acuminate at the base, glabrous and densely impressed-punctate on both surfaces; midrib slender, flat above, prominent beneath; secondaries very slender, 5 or 6 per side, arcuate-ascending, flat and rather obscure above, prominulous beneath; veinlet reticulation indiscernible on both surfaces; inflorescence axillary, 1- to few-flowered, shorter than the subtending leaves; peduncles very slender or subfiliform, obsolete or to 5 mm. long, puberulent; pedicels filiform, about 2 mm. long, whitish-puberulent; bractlets linear-oblong, about 2 mm. long and 1 mm. wide, conduplicate, whitish-puberulent; calyx campanulate, 2--3 mm. long, 1.5--2 mm. wide, grayish-puberulent, its rim plainly 5-toothed, the teeth ovate, about 1 mm. long; corolla dark-red, its tube cylindrical, arched, 1.5--1.8 cm. long, densely pubescent on the outside, the lobes about 2 mm. long, erect; stamens and pistil exerted 8--9 mm. from the corolla-tube; fruiting-calyx somewhat incrassate, campanulate, about 5 mm. long and 7 mm. wide, puberulent, the rim deeply 5-toothed, the teeth ovate, 2--2.5 mm. long, acute at the apex; fruit drupaceous, elliptic, about 7 mm. long and 5 mm. wide, glabrous, wrinkled in drying.

The type of this species was collected by Joseph Marie Henri Alfred Perrier de la Bâthie (no. 13709) at an altitude of 1500 meters on the Massif d'Andringitra, Madagascar, on April 19, 1911, and is deposited in the herbarium of the Muséum National d'Histoire Naturelle at Paris.

Citations: MADAGASCAR: Humbert 6382 (P); Perrier de la Bâthie 12679 (N, P), 13709 (N--photo of type, P--type, Z--photo of type).

VITEX RUBRO-AURANTIACA DeWild., Pl. Bequaert. 5: 15--16. 1929.

Literature: DeWild., Pl. Bequaert. 5: 15--16. 1929; Hill, Ind. Kew. Suppl. 8: 249. 1933; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 1], 49 & 104 (1942) and [ed. 2], 115 & 202. 1949.

Shrub; branches cylindrical when old, obscurely tetragonal on the youngest parts toward the tips, glabrescent; leaves 5-foliolate, all the leaflets equilateral or subequilateral; petioles 5--13 cm. long, glabrous, clearly canaliculate above; petiolules 2--15 mm. long, glabrous or with a few scattered hairs; leaflet-blades lanceolate-elliptic, 3.8--24 cm. long, 1.5--6.5 cm. wide, more or less abruptly long-acuminate at the apex, entire, long-cuneiform to the base, glabrous above, glabrous beneath or sparsely appressed-pilosulous on the larger veins, the

acumination apiculate and to 2 cm. long; secondaries about 10 per side; inflorescence axillary, somewhat branched, about 3 cm. long; peduncles 8—11 mm. long; cymes lax, glabrous, many-flowered, bracteolate, the branches about 5 mm. long; bractlets filiform, velutinous, to 2 mm. long, caducous; pedicels 3—4 mm. long, sparsely appressed-velutinous; calyx campanulate, about 3 mm. long, narrowed to the base, sparsely appressed-villous outside, its rim shortly 5-dentate, the teeth less than 1 mm. long; corolla red-orange or yellow-orange, short-tubular, its tube curvate, 8—10 mm. long, velutinous outside on the part not covered by the calyx, glabrous within except for a velutinous portion at the insertion of the stamens, the anterior lobe about 3 mm. long and 3.5 mm. wide, less velutinous than the tube, the lateral lobes shorter; ovary ovoid-globose, glabrous except for a few erect hairs toward the apex; fruit not known.

The type of this species was collected by Joseph Carles Corneille Bequaert (no. 6469) in the virgin forest between Masisi and Walikale, Belgian Congo, on January 3, 1915, and is deposited in the herbarium of the Jardin Botanique de l'Etat at Brussels. De Wildeman states that this species belongs in the Sect. Axillares of the Subgenus Euvitex as defined by Pieper, in the Subsect. Cymosae and the Grex Glandulosae. Because of the dimensions of the upper lip of the corolla, it seems to belong in the group with V. rivularis Gürke. It also closely approaches V. impressinervia Mildbr. because of its relatively large flowers, the characters of the calyx and corolla, its scattered appressed hairs, the calyx contracted at the base, and the short peduncles.

Citations: BELGIAN CONGO: Louis 2262 (N, N—photo, S, Z—photo), 6174 (N).

VITEX RUFA A. Chev., Expl. Bot. Afr. Occid. Franç. 1: 507, hyponym. 1920; Cavaco, Bull. Mus. Nat. Hist. Paris, sér. 2, 27: 91. 1956.

Literature: A. Chev., Expl. Bot. Afr. Occid. Franç. 1: 507. 1920; Hill, Ind. Kew. Suppl. 6: 219. 1926; Pieper in Engl., Bot. Jahrb. 62, Beibl. 141 ["142"]: 80. 1928; Cooper & Record, Bull. Yale Univ. School Forestry 31: pl. 11. 1931; Worsdell, Ind. Lond. Suppl. 2: 501. 1941; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 1], 46 & 104. 1942; Moldenke, Phytologia 2: 122. 1944; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 2], 112 & 202. 1949; Cavaco, Bull. Mus. Nat. Hist. Paris, sér. 2, 27: 91. 1956.

Illustrations: Cooper & Record, Bull. Yale Univ. School Forestry 31: pl. 11. 1931.

Nothing is known of this species except that it is supposed to grow in the Ivory Coast, where the type was collected by Auguste J. B. Chevalier (no. 19712) at the village of Grabo, in the country of the Tépos, in the basin of the Cavally, on August 3, 1907. No formal description has ever been published, as far as I am aware, but Chevalier says that it is a shrub. A common

name recorded for it is "kpar-seh". The G. P. Cooper 355, at one time regarded as representing this species by me, proves to be V. congolensis DeWild. & Th. Dur.

VITEX RUFESCENS A. L. Juss., Ann. Mus. Paris 7: 77. 1806.

Synonymy: Vitex perriana Moldenke, Geogr. Distrib. Avicenn. 27, nom. nud. 1939; Trop. Woods 64: 38—39. 1940. Vitex tomentosa Rich. ex Moldenke, Suppl. List Invalid Names 11, in syn. 1941 [not V. tomentosa Pav., 1940, nor Sessé & Moc., 1940].

Literature: A. L. Juss., Ann. Mus. Paris 7: 77. 1806; Moldenke, Geogr. Distrib. Avicenn. 27. 1939; Moldenke, Trop. Woods 64: 38—39. 1940; Moldenke, Suppl. List Invalid Names 11. 1941; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 1], 39 & 104. 1942; H. N. & A. L. Moldenke, Plant Life 2: 75. 1948; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 2], 95 & 202. 1949; H. N. & A. L. Moldenke, Anal. Inst. Biol. Mex. 20: 15. 1949; Pickel, Piseo e Marcgrave Bot. Bras. 87. 1949.

Shrub or tree, at least 1.5 m. tall; branchlets slender, obtusely tetragonal, rather densely puberulent throughout, corky, the bark flaking off, slightly compressed and ampliate at the nodes, not very medullose; twigs very slender, mostly short, tetragonal, usually decidedly flattened or compressed, often sulcate, densely pubescent with decidedly ferruginous or fulvous pubescence; nodes obscurely or not at all annulate; principal internodes 1—6.5 cm. long; leaves decussate-opposite, 3-foliate; petioles rather slender or stoutish, 2—7 cm. long, densely ferruginous-pubescent like the twigs, flattened and often subcanaliculate above, not conspicuously ampliate at the base; leaflets normally subequal in size, rarely one or both of the lateral ones somewhat smaller, sessile, submembranous or thin-chartaceous, dark-green on both surfaces or somewhat lighter beneath, the central one oblong or elliptic, 3—10.7 cm. long, 1.3—3.9 cm. wide, varying from rounded to acute or very shortly acuminate at the apex, entire, acute or somewhat attenuate at the base, very densely velutinous-villous above, very densely villous-tomentose beneath, the tomentum flavescent or fulvous, the lateral ones similar in all respects but usually less attenuate at the base; midrib slender, flat or subprominent above, prominent beneath, usually more densely villous than the lamina on both surfaces; secondaries slender, 7—12 per side, ascending, usually not much arcuate, flat and often more or less obscure above, prominent beneath, not very conspicuously joined; vein and veinlet reticulation usually indiscernible because of the tomentum on both surfaces; inflorescence axillary, cymose, 4—7 cm. long, 2—4 cm. wide, once or twice furcate with a central flower between the branches, few- to many-flowered, rather dense, densely ferruginous- or flavescent-pubescent or subvillous throughout; peduncles rather slender, opposite, 2—4 cm. long, densely pubescent-tomentose like the petioles, usually conspicuously flattened; pedicels obsolete or to 2 mm. long and densely villous-pubescent; bractlets oblong, sessile, to 1 cm.

long, densely tomentose; prophylla linear, 1—2 mm. long, hidden in the tomentum; calyx campanulate, 3—4 mm. long and wide, very densely rufous-tomentose, its rim shortly 5-toothed; corolla hypocrateriform, blue or violet, its tube broadly cylindric, about 1 cm. long, very densely rufous-tomentose outside, the limb 1—1.5 cm. wide, 2-lipped, the 4 small lobes 3—4 mm. long, oblong-elliptic, about 2 mm. wide, obtuse, the central basal lobe much enlarged, 8 mm. or more long and 6 mm. wide, spatulate-obovate, pubescent at the base within, all the lobes tomentose on the outside; stamens of 2 lengths, exserted; style exserted; fruiting-calyx and fruit not known.

The type of this endemic Brazilian species was collected by Vandelli somewhere in Brazil in or before 1790, and is deposited in the Jussieu Herbarium at the Muséum National d'Histoire Naturelle in Paris. The type of *V. perriana* was collected by Jacques Samuel Blanchet (no. 3434) at Igreja Velha, Bahia, Brazil, in 1841, although some of the isotypes bear labels reading "Jacobina" or "1837". The species has been collected in anthesis in September, November, and December, and has been confused with *V. polygama* Cham. Pickel, in the reference cited above, records the common name "iba purunga". Another vernacular name is "tamanqueiro".

Citations: BRAZIL: Bahia: Blanchet 3434 [Macbride photos 30187 & 34303] (B, Bm, Br, Cb, Cb, Cb, Cp, Dc, F—520960, F—876596, F—923151—photo, F—976258—photo, F—998444, F—1024492, K, K, Kr—photo, Kr—photo, M, N—photo, N—photo, P, P, V, V, X), s.n. [1857] (Cb, N); Herb. Bernhardi s.n. (B); Zehntner 5033 (Mu, N—photo, Z—photo). Parahyba: Moraes Vasconcellos 564 [Pickel 2795] (It, Sf, Ug), 2795 (N). Pernambuco: G. Gardner 2939, in part (Bm, K). Piahy: G. Gardner 2939, in part (K). Rio de Janeiro: Brade 18022 [Herb. Jard. Bot. Rio de Janeiro 55411] (N). State undetermined: Herb. Martius s.n. (Br, N—photo, Z—photo); Vandelli s.n. [1790; Herb. Jussieu 5050; Macbride photos 39501] (F—1039119—photo of type, Kr—photo of type, Mi—photo of type, N—photo of type, P—type, Z—photo of type); Zehntner 659 (Ja—32262).

VITEX RUFESCENS var. ABLUDENS (Moldenke) Moldenke, Phytologia 2: 477. 1948.

Synonymy: *Vitex perriana* var. *abludens* Moldenke, Alph. List Common Names 21, hyponym; Trop. Woods 64: 39. 1940.

Literature: Moldenke, Alph. List Common Names 21. 1939; Moldenke, Geogr. Distrib. Avicenn. 27. 1939; Moldenke, Trop. Woods 64: 39. 1940; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 1], 39 & 104. 1942; Moldenke, Phytologia 2: 121 (1944) and 477. 1948; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 2], 95 & 202. 1949.

This variety differs from the typical form of the species in its mostly longer petioles (which are usually 6.5--7.5 cm. long) and larger leaflets which are broadly elliptic, to 14.5 cm.

long and 7 cm. wide, varying from rounded or obtuse to emarginate at the apex. The pubescence on the upper leaflet-surface (which is brunnescent in drying) is also sparser and shorter.

The type of this variety was collected by Jacques Samuel Blanchet (no. 241) somewhere in Bahia, Brazil, probably in 1844, and is deposited in the herbarium of the Naturhistorisches Museum in Vienna. It is possible that the Glocker collection cited below is part of the type collection. On the Pickel collection cited below the petioles are only 4.5--6.5 cm. long and the corollas are described as violet in color. The collector records the common name "Maria molle".

Citations: BRAZIL: Bahia: Blanchet 241 [Macbride photos 34359] (Cb--isotype, E--photo of type, F--977226--photo of type, Kr--photo of type, N--photo of type, N--photo of type, P--isotype, V--type, Z--photo of type); Glocker 241 (Bm, N). Parahyba: Xavier 1318 [Herb. Jard. Bot. Rio de Janeiro 61592] (N). Pernambuco: Pickel 519 (B, N, N--photo, Z--photo).

VITEX SAMPSONI Hance, Journ. Bot. 6: 115. 1868.

Synonymy: Vitex sampsoni Hance ex Worsdell, Ind. Lond. Suppl. 2: 501, sphalm. 1941.

Literature: Hance, Journ. Bot. 6: 115. 1868; Jacks., Ind. Kew. 2: 1214. 1895; P'ei, Mem. Sci. Soc. China 1 (3): 93, 109, & 193, pl. 21. 1932; Worsdell, Ind. Lond. Suppl. 2: 501. 1941; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 1], 57 & 104. 1942; H. N. & A. L. Moldenke, Plant Life 2: 81. 1948; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 2], 133 & 202. 1949.

Illustrations: P'ei, Mem. Sci. Soc. China 1 (3): pl. 21. 1932.

Branches compressed-tetragonal, crisp-pilose; petioles as long as the leaflets, canaliculate above; leaves 3--5-foliolate; leaflet-blades abbreviated, resembling the leaves of Phyla nodiflora in size and shape, cuneate-spatulate, acute at the apex, entire toward the base, with 3--5 teeth on each margin above the middle, reticulate-venose, paler beneath, the lowest ones always completely entire; peduncles short; cymes forming simple axillary and interrupted terminal panicles; calyx 5-fid to about the middle, the segments acute; corolla violet, three times as long as the calyx, white-pilose on the outside; stamens and pistil exserted; fruiting-calyx and fruit not known.

The species is named in honor of Theophilus Sampson, an English plant collector who botanized in China for 31 years and who collected the type (no. 13841) along roadsides near Ting-ú-shán, Canton, China, on May 26, 1867. It is found in streambeds and on the shores of rivers and has been collected in anthesis in June and August. It has been confused in the past by herbarium workers with V. cannabifolia Sieb. & Zucc. and with V. incisa Lam.

Citations: CHINA: Kwangtung: Lau 20351 (Bz--25135, Er, N); Levine s.n. [Herb. Canton Chr. Coll. 746] (Ph); T. Sampson 13841 (N--isotype, N--photo of isotype, T--isotype).

VITEX SCABRA Wall., Numer. List [48], no. 1758, hyponym. 1829.

Literature: Wall., Numer. List [48], no. 1758. 1829; Jacks., Ind. Kew. 2: 1214. 1895; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 2], 202 & 214. 1949.

Nothing is known of this species except that Wallich published the name as "Vitex ? scabra Wall." and based it on his no. 1758, collected at Segaeen, Burma, in 1826. No formal description appears ever to have been published.

VITEX SCANDENS Moldenke, Phytologia 4: 63—64. 1952.

Synonymy: ?Vitex pycnophylla K. Schum. ex Briq. in Engl. & Prantl, Nat. Pflanzenfam. 4 (3a): 133, hyponym. 1895.

Liana; branches rather slender, round in cross-section, many-striate, glabrous; nodes not annulate; principal internodes 2—4 cm. long; leaves decussate-opposite, 5-foliolate; petioles slender, 6—10 cm. long, glabrous; leaflets sessile, membranous, dark-green above, lighter beneath, elliptic, short-acuminate at the apex, entire, acuminate attenuate at the base, glabrous on both surfaces, the central one 11—15 cm. long and 4.3—5.6 cm. wide, the lateral ones slightly smaller; midrib slender, flat above, prominent beneath; secondaries filiform, 11—15 per side, flat above, subprominulous beneath, widely spreading, arcuate only near the margins, not anastomosing; veinlet reticulation mostly indiscernible above, the larger parts somewhat subprominulous beneath in drying; inflorescence apparently subterminal, paniculate, about 15 cm. long and 4 cm. wide; peduncles slender, similar to the branchlets in color and texture, about 5 cm. long; sympodia similar, several, elongate to 4 cm. at the base, glabrous, striate, nigrescent; panicle-branches very slender, 1.5—2.7 cm. long, glabrous or very minutely pulverulent, cymosely branched; pedicels filiform, about 2 mm. long, minutely pulverulent-lepidote; bractlets linear, about 1 mm. long, lepidote; calyx campanulate, about 3 mm. long and wide, glabrous or minutely scattered-lepidote, nigrescent in drying, its rim deeply 4-toothed; corolla rose, about 1 cm. long in bud, densely incanous-puberulent on the outside; fruiting-calyx and fruit not known.

The type of this remarkable species with such a decided bigoniaceous aspect was collected by Willem Marius Docters van Leeuwen-Reijnvaan (no. 10703) at Exoedition Bivouac in the Nassau Mountains, Dutch New Guinea, in October of 1926, and is deposited in the Herbarium Bogoriense at Buitenzorg. It is known thus far only from the type collection. There never has been a description published for Vitex pycnophylla. Briquet merely states that it is a vine — presumably the only scandent species known to him. I assume, therefore, that it refers to the present species.

Citations: NEW GUINEA: Dutch New Guinea: Docters van Leeuwen-Reijnvaan 10703 (Bz--72698—type, N—isotype, N—photo of type, Z—photo of type).

VITEX SCHAUERIANA Moldenke, Revist. Sudam. Bot. 5: 3. 1937.

Synonymy: *Vitex montevidensis* var. *parviflora* Schau. in A. DC., Prodr. 11: 689. 1847 [not *V. parviflora* A. L. Juss., Ann. Mus. Hist. Nat. Paris 7: 76. 1806].

Literature: Schau. in A. DC., Prodr. 11: 689. 1847; Glaz., Bull. Soc. Bot. France Mém. 3: 547. 1911; Moldenke, Revist. Sudam. Bot. 5: 3. 1937; Moldenke, Geogr. Distrib. Avicenn. 27. 1939; Moldenke, Prelim. Alph. List Invalid Names 51. 1940; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 1], 39. 1942; Moldenke, Alph. List Invalid Names 54. 1942; Moldenke, Phytologia 2: 122. 1944; H. N. & A. L. Moldenke, Plant Life 2: 81. 1948; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 2], 95 & 202. 1949.

Shrub or tree, to 14 m. tall; trunk to 13 cm. in diameter; branchlets slender, gray, obtusely tetragonal, densely short-puberulent, becoming subglabrate in age; twigs slender, brown, very obtusely tetragonal or somewhat compressed, not conspicuously lenticellate, densely short-pubescent or puberulent with yellowish or brownish hairs, becoming less conspicuously so in age; nodes not annulate; principal internodes 0.3—6 cm. long, often greatly abbreviated throughout; leaves decussate-opposite or subopposite, 3—5-foliolate, mostly 5-foliolate; petioles slender, 3—7 cm. long, convex beneath, flattened above, more or less puberulent throughout, often slightly ampliate at the base and disciform at the apex; leaflets usually quite unequal in size, the lateral ones decidedly smaller than the central one, all subsessile or obscurely stipitate on deeply canaliculate and distinctly margined petiolules 1—2 mm. long; leaflet-blades rather thin-chartaceous, rather uniformly bright-green on both surfaces or lighter beneath, the central one oblong or narrowly elliptic, occasionally oblanceolate, 3.2—14.5 cm. long, 1.4—5.5 cm. wide, acuminate at the apex or subcaudate, the acumination itself usually blunt at the apex, entire, acute at the base, sometimes slightly inequilateral, glabrous and shiny above, obscurely puberulent-strigillose along the larger venation beneath or densely barbellate in the axils, becoming glabrous, the lateral ones similar in all respects only usually considerably smaller and usually less acuminate at the apex; midrib slender, flat or subimpressed above, prominent beneath; secondaries slender, 8—18 per side, ascending, rather straight and arcuate only near the margins where they are arcuately joined beneath, subprominulous above, prominulous beneath; vein and veinlet reticulation abundant, fine, subprominulous throughout on both surfaces; inflorescence axillary, capitate, 5.5—8.5 cm. long, 1.2—2 cm. wide, densely many-flowered; peduncles slender, 4.5—7 cm. long, flattened, more or less puberulent throughout; pedicels obsolete or slender and about 1 mm. long and densely puberulous or short-pubescent with cinereous hairs; bractlets abundant, simple or 3-foliolate, stipitate, to 1 cm. long; prophylla minute, hidden; calyx campanulate, 2.5—3 mm. long, about 3 mm. wide, densely short-pubescent with appressed sordid-cinereous antrorse hairs, its rim

5-dentate, the teeth less than 1 mm. long, sharply acute; corolla blue or violet, hypocrateriform, densely pubescent-tomentelous on the outside, its tube broadly cylindrical, about 5 mm. long, its upper and lateral lobes about 3 mm. long, the large inferior lip 6--8 mm. long and wide; stamens and style short-exserted; fruiting-calyx short-campanulate or patelliform, nigrescent, incrassate, 2--3 mm. long, 4--6 mm. wide, very minutely puberulous, its rim truncate, practically entire; fruit oblong-elliptic, drupaceous, nigrescent in drying, about 1 cm. long, 5-6 mm. wide, glabrous.

The variety on which this species is founded was based by Schauer on an unnumbered Riedel collection and on Blanchet 2782 from Serra d'Acurua, Rio São Francisco, Bahia, Brazil, collected in 1839. The Riedel collection is apparently in the Leningrad herbarium and has not been seen by me as yet. Schauer was of the opinion that V. bignonoides H.B.K. might belong here, but actually that binomial is a synonym of V. capitata Vahl. The Glaziou specimens cited below mostly bear labels reading "Rio de Janeiro", but nos. 13057 and 14160 were collected in Minas Gerais according to Glaziou's own published report.

The species inhabits high land, rocky soil, old clearings, terra firma, woods, matta, and caatinga, and has been collected in anthesis from January to March, and in fruit in February and March. Common names are "taruman", "taruman-sinho", "tarumansinho", and "tarumasinho". Glaziou lists "ipé branco" and "maminha de cadella" as common names for his no. 11319, which he erroneously determined as V. sellowiana Cham.

Many specimens of this species have been confused with and distributed by herbarium workers as V. montevidensis Cham. and even as Olytra flaccida Doell. The Zehntner collection cited below was regarded by Mansfeld as intermediate between V. bignonoides and V. montevidensis. The name "ipé branco" is applied also to V. mexiae Moldenke.

Citations: BRAZIL: Bahia: Blanchet 2782 [Macbride photos 30188 & 34300] (B--cotype, Em--cotype, Br--cotype, Br--cotype, Cb--cotype, Cb--cotype, Dc--cotype, Ed--cotype, F--876594--cotype, F--976278--photo of cotype, F--923152--photo of cotype, K--cotype, K--cotype, Kr--photo of cotype, Kr--photo of cotype, Lu--cotype, M--cotype, Mi--photo of cotype, N--photo of cotype, N--photo of cotype, N--photo of cotype, V--cotype, X--cotype, Z--photo of cotype); Fröes 20182 (Be--15518, N); Zehntner 4065 (B, E--photo, Mu, Mu, N--photo, Z--photo). Maranhão: Fröes 11583 (N, S), 11587 (N, S). Minas Gerais: Glaziou 13057 (B, B, Br, Br, Cb, Cp, F--538690, K, N, N--photo, P, Z--photo), 14160 (B, Br, Cb, Cp, K, N, N--photo, P, P, P, W--1112492, Z--photo). Rio de Janeiro: Barros 1222 [Herb. Jard. Bot. Rio de Janeiro 47599] (N); Glaziou 11319 (B, Cp, K, P); Luetzelburg 6945 (B). São Paulo: F. C. Hoehne s.n. [January 15, 1919] (N, N, Sp--3069). State undetermined: Blanchet s.n. (Dr); Herb. Douville s.n. (Cb).

VITEX SCHOMBURGKIANA Schau. in A. DC., Prodr. 11: 690. 1847.

Synonymy: Vitex capitata var. Benth. in Hook., Journ. Bot. 2: 53. 1839. Oxalis guayanensis R. Kn. ex Moldenke, Prelim. Alph. List Invalid Names 33, in syn. 1940.

Literature: Benth. in Hook., Journ. Bot. 2: 53. 1839; Benth., Ann. Nat. Hist. 2: 449. 1839; Linnaea 20: 483. 1847; Schau. in A. DC., Prodr. 11: 690. 1847; Moldenke, Geogr. Distrib. Avicenn. 21 & 27. 1939; Moldenke, Prelim. Alph. List Invalid Names 33 & 50. 1940; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 1], 33, 39, & 104. 1942; Moldenke, Alph. List Invalid Names 34 & 52. 1942; H. N. & A. L. Moldenke, Plant Life 2: 82. 1948; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 2], 67, 95, & 202. 1949.

Shrub or spreading tree, to 20 m. tall; branchlets slender, woody, subterete or very obtusely tetragonal, grayish, minutely puberulent, subglabrate in age, not noticeably lenticellate; twigs very slender, obtusely tetragonal or flattened, very densely short-pubescent with brownish velutinous pubescence; nodes not annulate; principal internodes 1--7 cm. long; leaf-scars rather small, not much elevated nor corky; leaves decussate-opposite, 5--7-foliolate; petioles very slender, 2--6.5 cm. long, convex beneath, concave and canaliculate above, very densely short-pubescent with brownish velutinous pubescence, not noticeably ampliate at the base nor apex; leaflets subequal or the lowermost ones considerably smaller, all sessile or subsessile; leaflet-blades thin-chartaceous or submembranous, dark-green above (often brunnescenscent in drying), much lighter beneath, the central one oblong-elliptic, narrow-elliptic, or lanceolate, 3--11.5 cm. long, 1.2--5.3 cm. wide, long-acuminate or subcaudate at the apex, entire, acute or acuminate at the base, very minutely and sparsely strigillose-pulverulent above when immature, glabrous in age except for the pulverulent midrib, densely velutinous-tomentellous beneath with brownish pubescence, the lateral ones similar in all respects but usually smaller; midrib slender, flat or subimpressed above, prominent beneath; secondaries slender, 7--17 per side, ascending, usually not much arcuate except at the margins where they are rather obscurely arcuate-joined beneath, flat above and usually not very conspicuous, slightly prominent beneath, often obscured by the dense tomentum; vein and veinlet reticulation fine, abundant, subprominent above on mature leaves (obscure on immature ones), usually hidden or indiscernible beneath; inflorescence axillary, capitate, 6--12.5 cm. long, 1.5--2.5 cm. wide, rarely branched with numerous slender branches arranged in umbelloid fashion, densely many-flowered, canescent- or sordid-puberulent or short-pubescent throughout, numerous; peduncles slender, 4.5--8.8 cm. long, brown in drying, flattened, puberulent or short-pubescent; pedicels mostly obsolete, rarely present and 1--3 mm. long on branched inflorescences; foliaceous bracts none; bractlets and prophylla linear or setaceous, 1--2 mm. long or less, densely short-pubescent with canescent hairs; calyx campanulate, small, about 2 mm. long and wide or less, densely short-pubescent with sordid-gray hairs, its rim minutely and obscurely 5-

denticulate; corolla hypocrateriform, light-blue or pale-blue, its tube broadly cylindric, about 5 mm. long, puberulent or short-pubescent above the calyx, its limb minutely puberulent inside, densely short-pubescent beneath, the 4 smaller lobes oblong-elliptic, about 3 mm. long, obtuse, the central lower lobe much enlarged, about 6 mm. long, rounded, clawed, densely bearded at the base; stamens and style somewhat exserted; fruiting-calyx very shallowly cupuliform, about 2 mm. long and 4--5 mm. wide, slightly strigillose or pilosulous on the outside, very shiny within, its rim very obscurely apiculate; fruit drupaceous, oval, nigrescent, about 3 times as long as the calyx.

The type of this species was collected on campos in British Guiana by Sir Moritz Richard Schomburgk (no. 421) — in whose honor it is named — in February, 1842. The species inhabits forests, the edges of woods, low swales, brushland bordering streams, and campos in British Guiana and northern Brazil. It has been considered to be a variety of *V. capitata* Vahl by Bentham. Schauer states that the corolla-limb is glabrous at its base, but this is not true in the specimens examined by me, where the lower lip is very densely barbate to its base.

The species has been collected in anthesis from February to April, and in fruit in February. In *Linnaea* 20: 483 (1847) it is stated that this species is closely related to *V. capitata* Vahl, *V. flavens* H.B.K., and *V. sellowiana* Cham., from all of which it may be distinguished by the character of its pubescence, leaflets, calyx, and corolla.

Citations: BRITISH GUIANA: Irwin 585 (W--2221848); G. R. M. Pollard 61 (K); M. R. Schomburgk 129 (Bm), 129.5 (K), 288 (Cb, K, N, P), 421 [Macbride photos 17566] (B--isotype, B--isotype, B--isotype, B--isotype, F--663045--photo of type, K--isotype, K--isotype, Kr--photo of type, N--isotype, N--photo of isotype), s. n. (B, L<sub>e</sub>); A. C. Smith 3232 (F--1016026, N, S). BRAZIL: Amazonas: Ule 7862 (B, K).

VITEX SCHOMBURGKIANA var. GRANDIFLORA Moldenke, Geogr. Distrib.

Avicenn. 27, nom. nud. 1939; Phytologia 1: 490. 1941.

Literature: Moldenke, Geogr. Distrib. Avicenn. 27. 1939; Moldenke, Phytologia 1: 490. 1941; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 1], 39 & 104 (1942) and [ed. 2], 95 & 202. 1949.

This variety differs from the typical form of the species in its larger flowers, the corolla-tube of which being 7--8 or more mm. long, its limb about 10 mm. wide, and in its brachiate cymes, the cyme-branches often to 2 cm. long and very divergent.

The type of the variety was collected by Gustav Wallis (no. 64) on the Rio Branco, Brazil, and is deposited in the herbarium of the Botanisches Museum at Berlin. It is known thus far only from the original collection.

Citations: BRAZIL: Rio Branco: Wallis 64 (B--type, N--isotype, N--photo of type, Z--photo of type).

VITEX SEBESIAE H. J. Lam ex Docters van Leeuwen, Bull. Jard.

Bot. Buitenz., ser. 3, 4: 311 & 314, hyponym. 1922; Bull. Jard. Bot. Buitenz., ser. 3, 5: 176--177. 1922.

Literature: Docters van Leeuwen, Bull. Jard. Bot. Buitenz., ser. 3, 4: 311 & 314. 1922; H. J. Lam, Bull. Jard. Bot. Buitenz., ser. 3, 5: 176--177. 1922; Moldenke, Known Geogr. Distrib. Verb-enac., [ed. 1], 66 & 104 (1942) and [ed. 2], 148 & 202. 1949.

Tree, about 10 m. tall; branches thick, tetragonal with rather obtuse angles, minutely longitudinally striate, glabrous but densely yellow-glandulose with minute glands, especially at the nodes; leaves decussate-opposite, 5- (or sometimes 6-) foliolate; petioles 10--12.7 cm. long, 1.5--2 mm. in diameter, yellow-glandulose and minutely pulverulent; leaflets petiolulate, the blades chartaceous, obovate or oblong-obovate, abruptly acuminate at the apex (the acumen itself obtuse), usually inequilateral and shortly decurrent at the base, glabrous above, becoming gray-fulvous in drying, and with very many minute areolae or hidden glands, dark beneath in drying and also marked with very many minute glands which are sometimes yellowish, minutely and sparsely pilose on both surfaces, the central one about 18 cm. long and 8.9--10.2 cm. wide, on a petiolule 3.1--4.2 cm. long, the lateral ones 14--18.5 cm. long and 6.8--10 cm. wide, on petiolules 1.1--2 cm. long, the basal ones 6.2--14 cm. long and 2--3.7 cm. wide, on petiolules 4--8 mm. long, the petiolules yellow-glandulose and minutely pulverulent; midrib scarcely prominent above, short-pilose with crisped hairs, rather sparsely pilose beneath; secondaries 9--11, diverging from the midrib at an angle of  $45^{\circ}$ , somewhat arcuate toward the margins, short-pilose with crisped hairs above, rather sparsely pilose beneath; tertiaries numerous, parallel to each other, regular, rather straight, joining the secondaries, forming a reticulum near the margins, rather sparsely pilose beneath; inflorescence terminal, sometimes thyriform, dense, eventually interrupted, 12--13 cm. long, 2.5--5 cm. wide, composed of small cymes which are binary, decussate-opposite, 2--5 times dichotomous, 4--32-flowered, 0.9--2.5 cm. long, and 0.9--3 cm. wide; peduncles 2--6 mm. long, pulverulent; bracts caducous; pedicels 2 mm. long, pulverulent; bractlets minute, about 1.25 mm. long, linear, caducous; calyx urceolate, about 3 mm. long, glabrous within, pulverulent outside, with a gland at its base, its rim 5-dentate, the teeth regular, minute; flower-buds densely pulverulent and glandulose except for the lower part of the corolla-tube; corolla violet, its tube about 8 mm. long, the lower 3.5 mm. straight, beyond that dilated and curvate, the upper lip 2-lobed, the lobes obtusely deltoid and about 2 mm. long, the lower lip 3-lobed, the 2 lateral lobes obtusely deltoid and about 3 mm. long, the central lobe or labellum about 5 mm. long and 6 mm. wide, irregularly sinuate along the margin and barbate above the base, the lobes and upper portion of the corolla-tube densely pulverulent and glandulose on the outer surface except for the margins of the labellum, glabrous inside except for the barbate base of the labellum; stamens subdidynamous, inserted in that part of the corolla-tube which is pilose on the outside,

exserted about 4 mm. from the corolla-mouth; filaments glabrous; anthers about 1 mm. long, the mature thecae semilunate, divergent or sometimes some continuous; style glabrous, exserted about 6 mm. from the corolla-mouth; stigma bifid, its branches about 0.5 mm. long; ovary conic, glabrous or somewhat glandulose; fruit globose, about 7 mm. in diameter, included in the lower part of the fruiting-calyx, glabrous.

The type of this species was collected by Willem Marius Docters van Leeuwen-Reijnvaan (no. 5355) at the edge of a jungle, 100 meters altitude, on Sebesi Island in the Sunda Strait between Java and Sumatra, on April 28, 1921, and is deposited in the Herbarium Bogoriense at Buitenzorg. The leaves of the type and only known collection are infested by galls made by a gall-mite. The galls are small, mostly circular or oval patches of a granular appearance on the under leaflet-surface, with a slight concavity on the upper surface.

Lam states that the species is apparently closely related to *V. quinata* (Lour.) F. N. Will., but may be distinguished by its coarser, broader, obovate leaflets, much longer petioles and petiolules, and violet corollas. In *V. quinata* (which Dr. Lam calls *V. heterophylla* var. *genuina* H. J. Lam) the leaves are "always narrow-elliptic", according to this distinguished authority on the Verbenaceae of the Pacific area. However, I have found them to vary from oblong-elliptic to oblanceolate or even subobovate.

Citations: LESSER SUNDA ISLANDS: Sebesi: Docters van Leeuwen-Reijnvaan 5355 (Bz--25136--type, Bz--25137--isotype, N--photo of type, Z--photo of type).

VITEX SECUNDIFLORA H. Hallier, Meded. Rijks Herb. Leid. 37: 49--50. 1918.

Literature: H. Hallier, Meded. Rijks Herb. Leid. 37: 49--50. 1918; H. J. Lam, Verbenac. Malay. Arch. 168, 198--199, & 370. 1919; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 1], 65 & 104 (1942) and [ed. 2], 146 & 202. 1949.

Tree, about 10 m. tall; branchlets tetragonal; petioles glabrous; intrapetiolar margins present, without hairs; leaves 3--5-foliolate; petioles 3.5--10 cm. long, the upper ones often winged and then 5--6 mm. wide (including the wings); leaflets sessile, the blades obovate or obovate-elliptic, narrowly obtuse or acuminate at the apex, entire, varying from narrowly obtuse to acute or acuminate at the base, chartaceous, glabrous on both surfaces, the veinlet reticulum conspicuous on both surfaces, the central one 8--13 cm. long and 2.5--5 cm. wide, on a petiole 1--2 mm. long; inflorescence terminal, paniculate, 14--20 cm. long, 8--10 cm. wide, very minutely pubescent; pedicels about 1 mm. long; calyx cyathiform, about 2 mm. long, glabrous, with peltate scales toward the rim, the rim 5-toothed, the teeth ciliate; corolla-tube 4--5 mm. long, infundibular, glabrous, with some scales, villous in the throat, the lip densely villous within, all the lobes pubescent near their margins, four about 2 mm. long and wide, the fifth 4--5 mm. long and 3 mm. wide.